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SOSIPPUS REVISITED: REVIEW OF A WEB-BUILDING WOLF SPIDER GENUS FROM THE AMERICAS (ARANEAE, LYCOSIDAE)

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ABSTRACT. The systematic status of the wolf spider genus *Sosippus* Simon 1888 is reviewed. Males of four species: *S. placidus* Brady 1972, *S. janus* Brady 1972, *S. michoacanus* Brady 1962 and *S. agalenoides* Banks 1909 are described and fully illustrated for the first time. A cladistic analysis based upon twelve morphological characters resulted in two distinct species-groups within *Sosippus*. One species-group of the genus occurs from Georgia and Florida in the southeastern United States, westward along the Gulf Coast to south Texas. A second species-group occurs in Arizona and California, and is found in Mexico and Central America as far south as Costa Rica. A new key to the ten species of *Sosippus* now recognized is presented and updated to include male characters and other features. Collections and observations since earlier studies have provided new information about the social behavior and more widespread distribution of *Sosippus janus*. Maps have been reconstructed to update the ranges of all species. A preliminary cladistic analysis of the nine species of *Sosippus* for which both genders are known is presented. Additional critical drawings are provided to illustrate features in the character analysis and facilitate use of the key.

Keywords: Systematics, phylogeny, new descriptions, Nearctic, Neotropical.

Previous studies (Brady 1962, 1972) revealed *Sosippus* Simon 1888 to be unique among lycosids in several traits. The genus was originally placed in the subfamily Hippasinae because of its elongated spinnerets associated with its web building behavior. In comparing *Sosippus* to species of *Hippasa* Simon 1885, little similarity was found in any diagnostic features, and the existence of any close relationship between *Sosippus* and the other Hippasinae is doubtful. Dondale (1986) in his studies of the subfamilies of Lycosidae placed *Sosippus* [together with *Porrimosa* Roewer 1960 (now *Aglaoctenus* Tullgren 1905) and its relatives] in the new subfamily Sosippinae. Dondale's decision was based upon characteristics of the male palpus: (1) the loss of the terminal apophysis, (2) the tegular groove functioning as a conductor, and (3) the embolus lying among a cluster of tegular processes. According to Dondale the sister group of the Sosippinae is represented by all subfamilies of lycosids taken together. A recent analysis of combined 12S rRNA, 28S rRNA and NADH1 mtDNA genes by Murphy et al. (2006) recognized a distinct clade that includes *Sosippus placidus* Brady 1972 and *Aglaoctenus lagotis* (Holmberg 1876), supporting their recognition as members of a separate subfamily.

A particular feature of zoogeographical interest is the restricted distribution of *S. placidus* in south central Florida in an area defined as Red Hill Island. During the Aftonian Interglacial period Red Hill was the southernmost island in a series of islands that occurred where the Florida peninsula now stands (Laessle 1958). Brady (1972) suggested two factors influencing this insular pattern. First, open water gaps between the Pleistocene islands that could have served as effective barriers to species dispersal between the islands, and secondly, and more convincingly, the reduction in population numbers on these Pleistocene islands producing a corresponding reduction in genetic variability that could have facilitated speciation. In terms used by Ernst Mayr (1963), a genetic revolution would have occurred. In synopsis, the geographical isolates would have become genetically homogeneous and ecologically specialized for the conditions on the Pleistocene islands. As these islands were joined after the Pleistocene, the insular populations remained effectively isolated eco-

logically and reproductively. The present day distribution pattern of two species, *S. placidus* and *S. janus* Brady 1972 (to a lesser extent), fit well with the configuration of islands during the Pleistocene; however, the saltwater barriers between islands may not have been so great as to overcome the ability of most spiders to balloon.

The emerging factor that was missing from this original hypothesis (Brady 1972) is the observation of sub-social behavior in several species of *Sosippus* and the concomitant lack of long-range dispersal. Many lycosid spiderlings are known to balloon soon after leaving the dorsum of the abdomen of the female where they are first lodged after hatching from the egg case. The female is instrumental in dispersal as she moves about. But unlike many other lycosid species, the young of *Sosippus* remain with the female for long periods. Upon hatching from the egg sac and riding on the female's abdomen for some time the young remain in the web with the female (Brach 1976). Since the females do not leave the funnel web, the young do not scatter, and ballooning has not been observed. Thus, dispersal is strictly limited, reinforcing the endemism characteristic of the above two species. Once populations of *Sosippus* are separated, they will tend to disperse very slowly even in the absence of significant geographic barriers. In 1997 observations of *S. janus* in my own laboratory confirmed that the young remain with the female in the web even after several molts. When both species were contained in five-gallon terraria, the young of *S. janus* were observed to be much more tolerant of one another than the young of *Allocosa georgicola* (Walckenaer 1837) under similar conditions. In several instances the young of *S. janus* participated in group feeding after the female had captured large prey items (crickets). The young alone were not able to utilize large prey items. The study of *Sosippus*, involving its phylogenetic relationships to other Lycosidae, its ecological and geographical distribution pattern, and its subsocial behavior, continues to raise many interesting questions.

METHODS

The procedures for illustrations and color descriptions as well as methods for measurements are described in Brady (1962, 1979). All measurements are in millimeters.

Specimens are lodged in the following institutions: American Museum of Natural History, New York (AMNH); Museum of Natural History, London (BMNH); California Academy of Sciences, San Francisco (CAS); Florida State Collection of Arthropods, Gainesville (FSCA); Hope College Collection, Holland, Michigan (HCC); Museum of Comparative Zoology at Harvard, Cambridge, Massachusetts (MCZ); and Museum National d'Histoire Naturelle, Paris (MNHN).

Phylogenetic analysis.—Species belonging to *Sosippus* were selected as the in-group members: *S. placidus*, *S. floridanus* Simon 1898, *S. janus*, *S. mimus* Chamberlin 1924, *S. texanus* Brady 1962, *S. californicus* Simon 1898, *S. michocanus* Brady 1962, *S. mexicanus* Simon 1888, and *S. agalenoides* Banks 1909. Since *S. plutonus* Brady 1962 is still known only from a single female and the male has not been discovered, it has been excluded from the study. The genus *Aglaoctenus* serves as the out-group in the cladistic analysis with the type species *Aglaoctenus lagotis* (C.L. Koch 1847) serving as the exemplar. Species in *Aglaoctenus* and *Sosippus* make up the primary members of the subfamily Sosippinae as defined by Dondale (1986). The recognition of this subfamily was based upon characteristics of the male palpus: (1) the loss of the terminal apophysis, (2) the tegular groove functioning as a conductor, and (3) the embolus lying among a cluster of tegular processes. Because they are encountered much more frequently in the taxonomic literature, attention is called here to the generic names *Porrimula* Roewer 1960 and *Porrimosa* Roewer 1960, previously used for the species now described under *Aglaoctenus* (Capocasale 1982, 1991). *Aglaoctenus* Tullgren 1905, is a senior synonym of *Porrimosa* Roewer, contra to the decision by Carico (1993). The status of *Aglaoctenus* was clarified by Santos & Brescovit (2001) in a revision of that South American spider genus. The reasons for these changes in generic placement are summarized in Platnick (2006).

Sosippus and *Aglaoctenus* are the only New World genera of Lycosidae reported to build sheet webs with funnel-shaped retreats. Concomitant to this activity is the presence of elongate posterior spinnerets. Another notable feature in species of these two genera is the

Table 1.—Morphological data matrix used for the cladistic analysis of *Sosippus* species. Character numbers are the same as those described in the text.

Species	Characters											
	0	1	2	3	4	5	6	7	8	9	10	11
Sosippus texanus	0	0	0	0	0	1	1	0	1	1	1	1
Sosippus placidus	0	0	0	0	0	1	1	1	1	1	1	1
Sosippus mimus	0	0	0	0	0	1	1	0	1	1	1	1
Sosippus michoacanus	0	0	0	0	0	0	0	0	0	0	0	0
Sosippus mexicanus	0	0	0	0	0	0	0	0	0	0	0	0
Sosippus janus	0	0	0	0	1	1	1	0	1	1	1	1
Sosippus floridanus	0	0	0	0	1	0	1	0	1	1	1	1
Sosippus californicus	0	0	0	0	0	0	0	0	0	0	1	0
Sosippus agelenoides	0	0	0	0	0	0	0	0	0	0	0	0
Aglaoctenus lagotis	1	1	1	1	0	0	0	0	1	0	0	1

absence in the male of pedipalpal stridulatory organs, reported by Fernandez-Montraveta and Simo (2002) for *Aglaoctenus lagotis* and also true for the nine species of *Sosippus* that I have examined. In addition, the species studied have close similarities in color pattern, body structure, and male and female genital morphology. Murphy et al. (2006) also found *Sosippus* and *Aglaoctenus* to be sister-taxa. Because of the absence of comparable features in other North American Lycosidae, I found that using different lycosid species, such as *Rabidosa rabida* (Walckenaer 1837) or *Gladicosa gulosa* (Walckenaer 1837), as a second out-group, did not yield any significant insight to evolutionary relationships.

Characters and character states.—Character scoring is presented in Table 1. The character matrix consists of 12 characters. These characters are based upon somatic morphology (5), color patterns (3) and structural components of the male and female copulatory organs (4). Characters were scored through careful measurement, examination and illustration of key taxonomic components as well as observation of most species in the field.

Character descriptions.—*Somatic characters (Fig. 1):* Character 0: Anterior eye row (AER); 0 = slightly recurved (Fig. 2), 1 = strongly recurved (Fig. 3).

Character 1: Anterior lateral eye (ALE) nacelles; 0 = not strongly developed (Fig. 2), 1 = well developed and directed down and outward (Fig. 3).

Character 2: Size ratio of posterior lateral eye row (PLR) width to posterior ocular quadrangle length (POQL); 0 = PLR width less than 1.5 times POQL, 1 = PLR width greater than 1.5 times POQL.

Character 3: Size ratio of clypeus height (CLPH) to diameter of anterior median eye (AME); 0 = CLPH subequal to AME diameter, 1 = CLPH less than AME diameter.

Character 4: Number of teeth on each side of retromarginal edge of cheliceral fang groove; 0 = three teeth, 1 = four teeth.

Character 5: Color pattern on carapace; 0 = with distinct white marginal or submarginal longitudinal white stripes (Figs. 4, 7, 9–11, 12, 15); 1 = pattern diffuse, without distinct marginal or submarginal white stripes (Figs. 5, 6, 12, 13).

Character 6: Predominant coloration of carapace, produced by pigmentation of integument together with clothing of short setae or pubescence (basically the color of the spider in life or when dried); 0 = yellow to brown in appearance, 1 = gray to black in appearance.

Character 7: Color of venter of abdomen; 0 = tan to pale yellow or cream, 1 = orange or red-orange.

Female reproductive structures: Character 8: Copulatory openings (CO); 0 = oval or tear drop in shape (Figs. 31, 35, 39), 1 = narrow groove, almost linear in shape (Figs. 19, 23, 26, 27).

Character 9: Size ratio of width of anterior neck (N) of middle field (MF) to width of posterior edge of transverse piece (TP); 0 = wide, N width more than 1/3 of TP (Figs. 31, 35, 39), 1 = narrow, N width 1/3 or less than TP (Figs. 19, 23, 26, 27).

Male reproductive structures: Character 10:

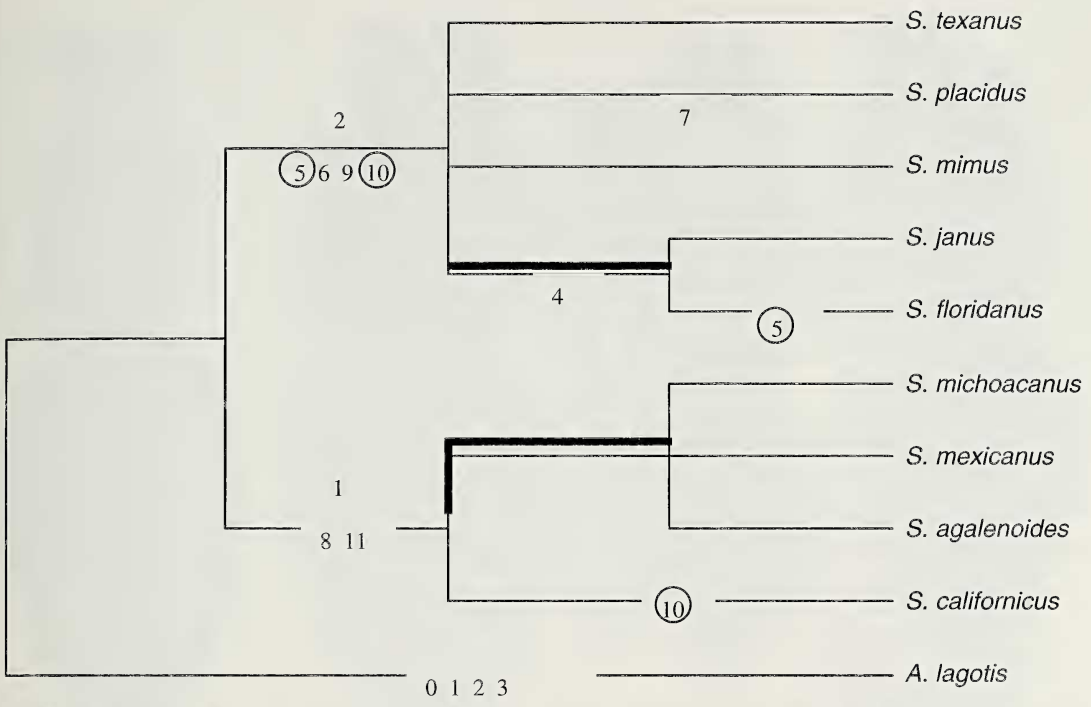
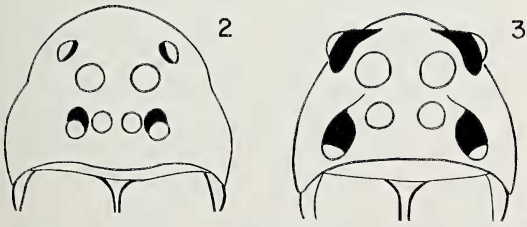


Figure 1.—A single representative of eight most parsimonious trees produced by analysis of morphological data of *Sosippus* and *Aglaoctenus lagotis* (14 steps, CI = 0.86, RI = 0.91) with character state distributions shown. Numbers above branches indicate decay values. Numbers below branches refer to characters that change along those branches (circled numbers indicate characters that are homoplasious). Bold branches collapse in the strict consensus.

Presence of finger or thumb-like conductor (C) (tegular apophysis *a* of Sierwald 2000); 0 = conductor elongate, broad and thumb-like (Figs. 28, 32, 36), 1= conductor elongate, thin and finger-like (Figs. 16, 20, 24).

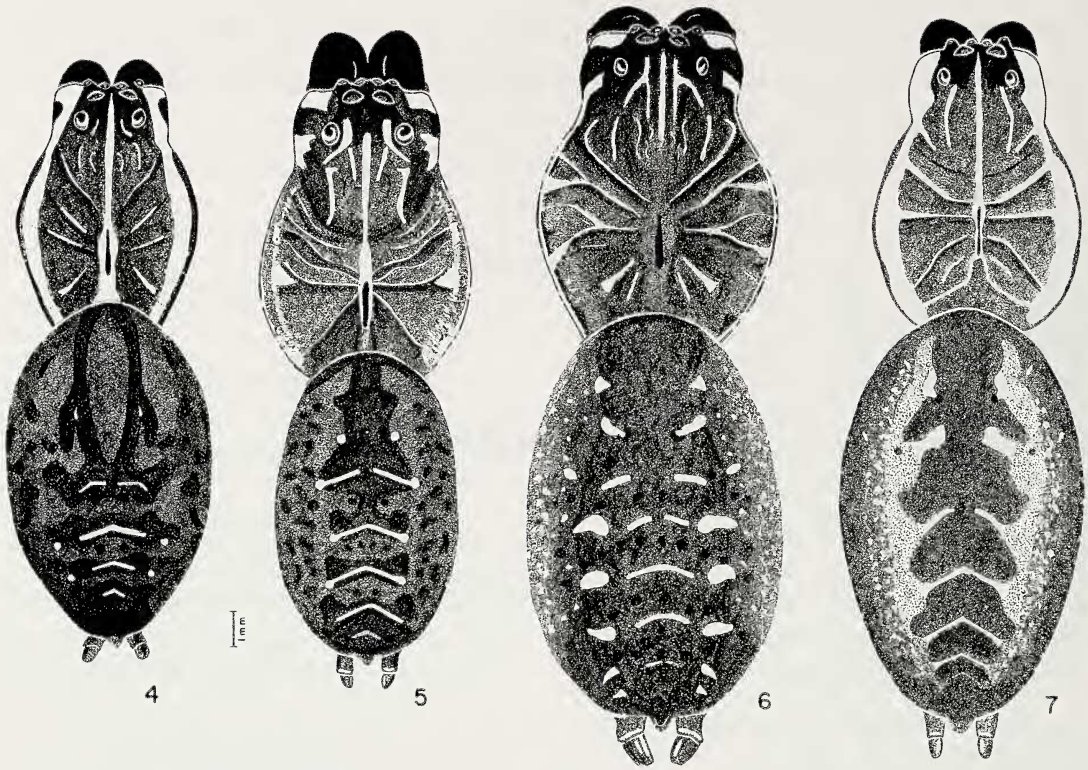
Character 11: Presence or absence of pearlescent retrolateral lobe (RL) of cymbium (CY); 0 = pearlescent lobe present (Figs. 28, 32, 36), 1 = pearlescent lobe absent (Figs. 16, 20, 24).



Figures 2, 3.—Carapace, frontal view, showing eye arrangement: 2. *Sosippus texanus*, female from Goose Island State Park, Aransas County, Texas; 3. *Aglaoctenus lagotis* (O. Pickard-Cambridge), female from Rockstone, British Guiana.

Analysis.—Nine species of *Sosippus* and one outgroup, *Aglaoctenus lagotis*, were scored for 12 morphological characters, and cladistic analyses were conducted using PAUP* version 4.0b10 (Swofford 1999). An exhaustive search was conducted, with all characters treated as unordered and assigned equal weight. Decay values were determined using AutoDecay version 5.0 (Eriksson 2001) and executed in PAUP* using the branch and bound search algorithm. When characters were optimized onto the resulting phylogeny, the DELTRAN option was selected.

Results.—Phylogenetic analyses resulted in eight most parsimonious trees (Fig. 1; 14 steps, CI = 0.86, RI = 0.91). Mapping character state distributions onto a consensus tree is not appropriate, so one tree was selected. In order to accommodate this: 1) I selected an example from the eight trees that represents zoogeographic trends seen in the group; and 2) I indicated which of the branches in the representative tree collapse in the strict consensus. Two well-supported clades were



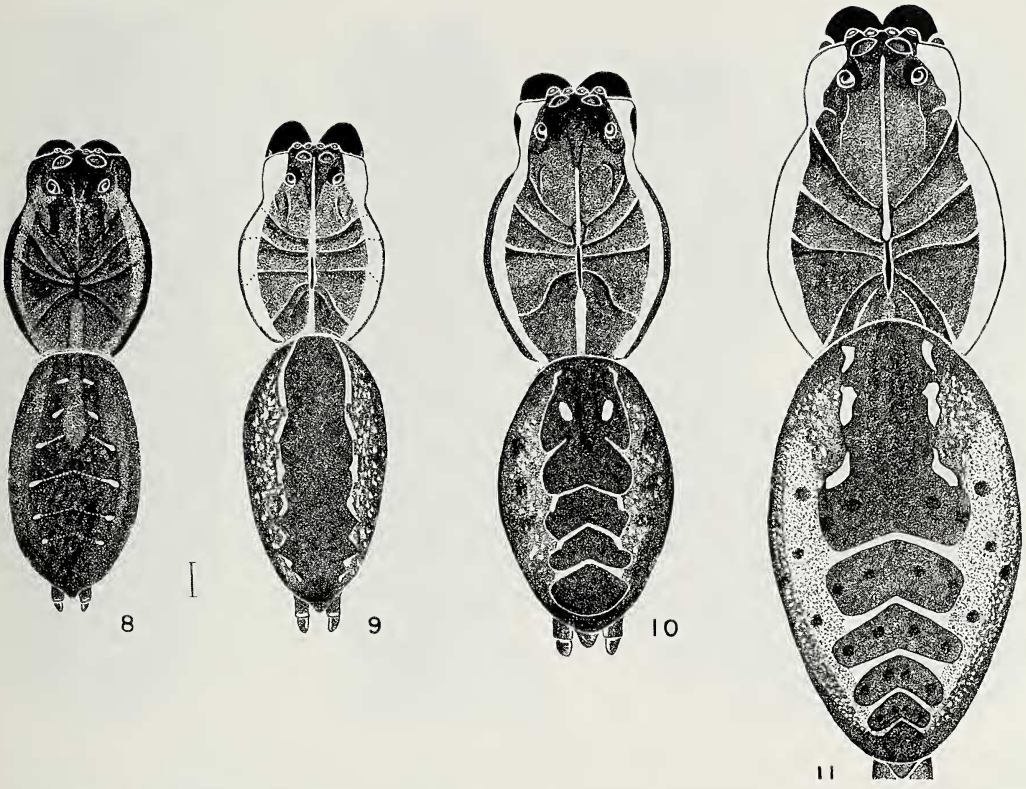
Figures 4–7.—Dorsal view of *Sosippus* females: 4. *S. floridanus* from Highlands Hammock State Park, Highlands County, Florida; 5. *S. mimus* holotype, from Mandeville, Saint Tammany Parish, Louisiana; 6. *S. texanus* from Goose Island State Park, Aransas County, Texas; 7. *S. californicus* from Brown's Canyon, Baboquivari Mountains, Pima County, Arizona.

found, one containing species with a predominant eastern distribution pattern (*S. placidus*, *S. floridanus*, *S. janus*, *S. mimus*, and *S. texanus*) and the other clade with species in the western United States, Mexico, and Central America (*S. californicus*, *S. michoacanus*, *S. mexicanus*, *S. agalenoides*). No resolution was found within either clade.

Discussion.—The subfamily Sosippinae, represented predominantly by *Sosippus* and *Aglaoctenus*, is defined by its web-building behavior and elongate posterior spinnerets. Dondale (1986) cites the loss of the terminal apophysis, the tegular groove functioning as conductor, and the embolus lying among a cluster of tegular apophyses as diagnostic characters of this subfamily. The absence of male stridulatory organs at the tibio-palpal joint and the lack of macrosetae at the distal end of the palpus are shared characters of this clade (Fernandez-Montraveta & Simo 2002). The recognition of the subfamily Sosippinae is also supported by a worldwide investigation of Lycosidae undertaken by Murphy et al. (2006) using molecular markers. Color patterns on the carapace, as illustrated in this paper, and the morphology of the male and female genital organs also separate sosippines from other lycosids.

Aglaoctenus lagotis is distinguished from *Sosippus* primarily by the arrangement and development of the eye rows (Table 1). Characters 0, 1, 2 and 3 clearly separate *Aglaoctenus lagotis* from *Sosippus* and emphasize the dramatic differences in eye arrangement between these two genera. Although showing similarities, the male and female genital morphology are also quite distinct. These similarities and differences can be seen by comparing illustrations of the two genera.

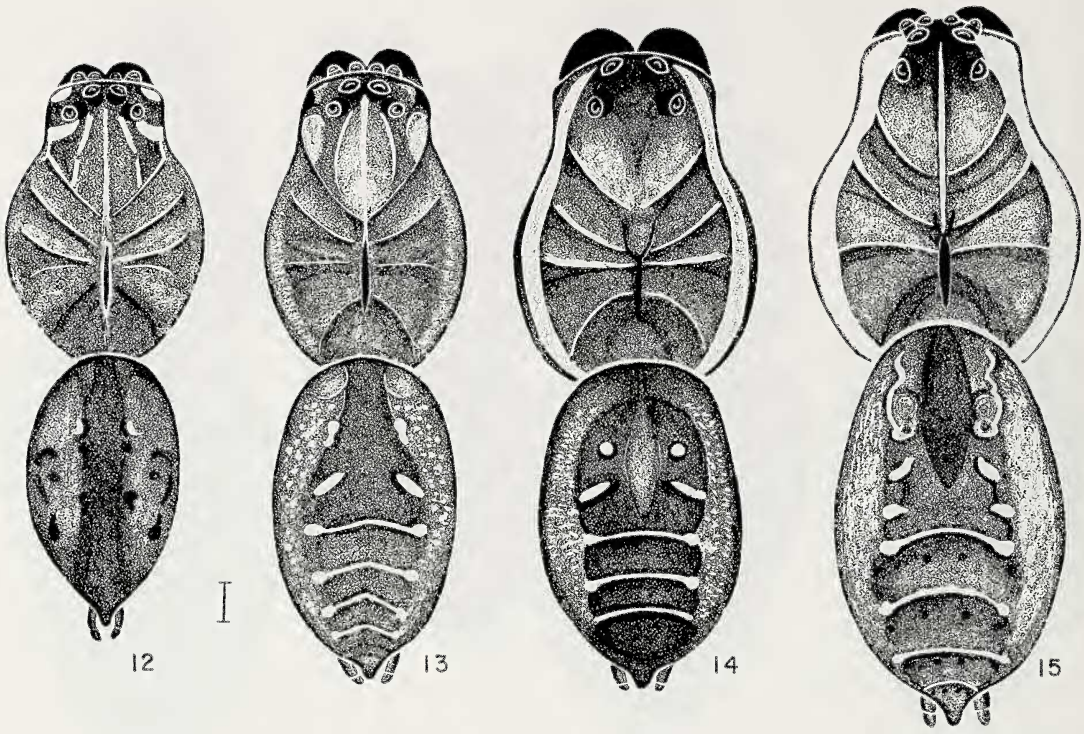
Number of retromarginal cheliceral teeth (Character 4), pigmentation of the carapace (Character 6) and venter (Character 7) are rather general (pleisiomorphic) characters shared by *Sosippus* and *Aglaoctenus*. They occur in other lycosids. The color pattern on the cara-



Figures 8–11.—Dorsal view of *Sosippus* females: 8. *S. plutonus* holotype, from Tenango del Valle, Mexico, Mexico; 9. *S. mexicanus* from Acapulco de Juarez, Guerrero, Mexico; 10. *S. michoacanus* holotype, from Tzaracua Falls, 11 km. from Uruapan, Michoacan, Mexico; 11. *S. agalenoides* syntype, from Puntarenas, Puntarenas, Costa Rica.

pace (Character 5) and morphology of the reproductive structures (Characters 8, 9, 10, 11) represent more specific characters (synapomorphies) separating them from other clades, but shared within the subfamily Sosippinae. However, these characters are clearly distinct between *Aglaoctenus* and *Sosippus*, and support their recognition as separate genera.

Examination of *Sosippus* from a geographic perspective, as well as morphological examination, allows for some interesting phylogenetic speculation. In general *Sosippus* appears to have originated in a tropical or subtropical climate (Central America) and then expanded northward into North America, diverging into eastern and western clades. In the eastern clade the same number of 3-3 retromarginal teeth (Character 4) and diffuse color pattern (Character 5) can be traced, beginning with *S. texanus* in southern Texas, to *S. mimus* from Louisiana to western Florida, and south to the Lake Placid population of *S. placidus*. The pattern of 4-4 retromarginal teeth in *S. janus* and *S. floridanus* appears to be a derived character and links these two species. However, *S. janus* retains the diffuse color pattern linking it with *S. mimus* and *S. placidus*, suggesting that *S. floridanus* may be the most recently derived species. In the western clade, which is connected with the Mexican and Central American species, a phylogenetic pattern is more difficult to discern. *Sosippus californicus*, *S. michoacanus*, *S. mexicanus and S. agalenoides* share yellow-brown pigmentation (Character 6), the presence of a pearlescent retrolateral lobe on the cymbium (Character 11), and a relatively wide anterior neck on the middle field of the epigynum (Character 8). Geographically it appears that *S. californicus* is a recently derived species and that *S. agalenoides* with its more southerly distribution may link *Sosippus* to *Aglaoctenus*. However, *S. michoacanus* appears closer to *Aglaoctenus lagotis* in structure of the male palpal organ



Figures 12–15.—Dorsal view of *Sosippus* males. 12. *S. janus* from Welaka Reserve, Welaka, Putnam County, Florida; 13. *S. placidus* from 9.6 km S. of Lake Placid, Highlands County, Florida; 14. *S. michoacanus* from 12.8 km SW of Colima, Colima, Mexico; 15. *S. agalenoides* from Puntarenas, Puntarenas, Costa Rica.

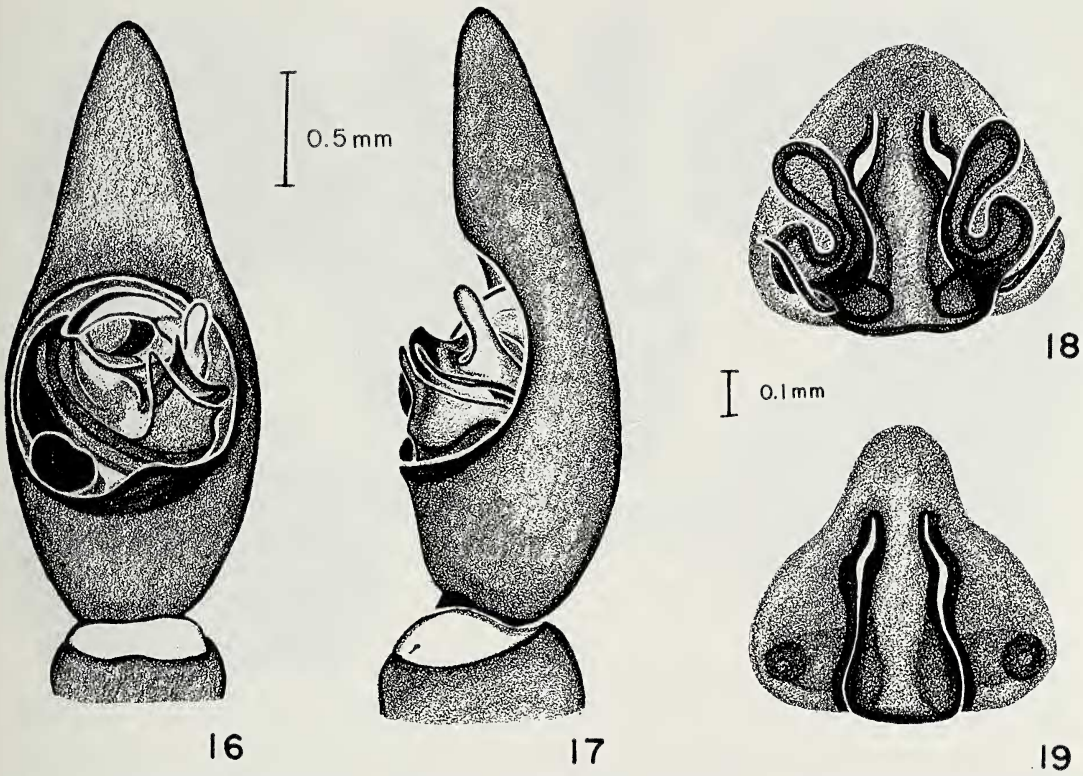
and the female epigynum, which might qualify it for the closest link to an ancestral clade connecting *Sosippus* and *Aglaoctenus*.

Mexican species of *Sosippus* have not been well-collected and it is possible that other species are present in Mexico and Central America. The varied topography, different biomes and varied vegetation of this region provide physical conditions for speciation. Because of its specialized habits that limit dispersal, it is very likely that additional species of *Sosippus* exist there. Much more work needs to be done in the field and laboratory to elucidate the phylogenetic relationships of species described in *Sosippus* and *Aglaoctenus*.

Methods.—An explanation of the methods used in making measurements, as well as for color descriptions and illustrations is provided in Brady (1962). The measurement of the posterior ocular quadrangle (POQ) is illustrated in fig. 1. However, the line tangent to the anterior most part of the PME, rather than the line tangent to the AME, is now used in measuring the length of the carapace and total body length.

In the Key to Species "Figs." (capitalized) refer to figures included in this paper, while "figs."(not capitalized) refer to figures in previous papers. The figures in this paper, other than those of newly described males, were carefully chosen to facilitate use of the key and elucidate characters used in the cladogram. The Key to Species can be readily used without reference to figures from previous papers. The earlier references (figs.) are for systematists who might want to see variation in genitalic structure, or follow the changes in nomenclature of *Sosippus* populations in Florida.

Under Material Examined for species that are relatively rare or uncommon, I have cited all of the records (both old and new). For species that are common, with many records from earlier publications, I have added new records only, and so indicated. Where new records are not indicated, it means that all of the records of examined specimens are listed.



Figures 16–19.—*Sosippus placidus*. 16, 17. Male from 9.6 km S. of Lake Placid, Highlands County, Florida: 16. Left palp, ventral view; 17. Left palp, retrolateral view. 18, 19. Female from 9.6 km S. of Lake Placid, Highlands County, Florida: 18. Vulva, dorsal view; 19. Epigynum, ventral view.

TAXONOMY

Family Lycosidae Sundevall 1833

Sosippus Simon 1888

Sosippus Simon 1888:206.

Sosippinus Roewer 1955:923. First synonymized by Brady 1962:131.

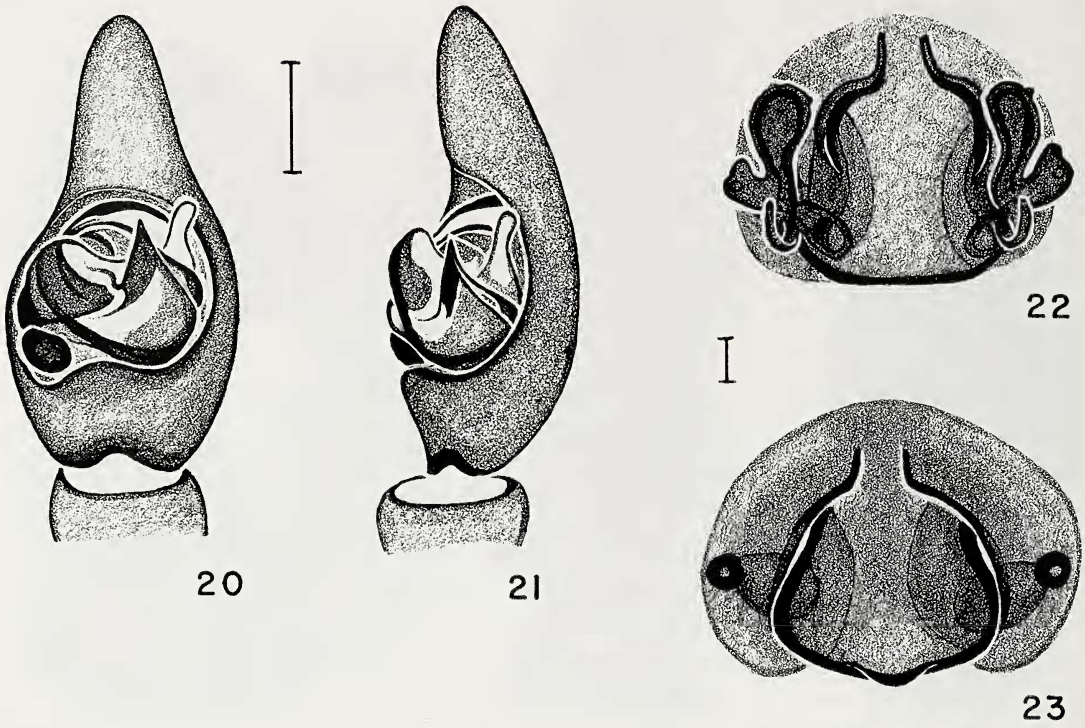
Hippasella Mello-Leitao 1944:342. First synonymized by Capocasale, 1990:140.

Type species.—*Sosippus: Sosippus mexicanus* Simon 1888. The problem of the type species has been discussed by Bonnet (1958). Simon (1888) established the genus *Sosippus* and designated *Dolomedes oblongus* C.L. Koch 1847 [now *Aglaoctenus oblongus* (C.L. Koch)] as the type. At the same time he described *Sosippus mexicanus* as a new species. In 1898 Simon transferred *D. oblongus* to the genus *Diapontia* Keyserling 1876 and designated *S. mexicanus* as the type species of *Sosippus*. *Sosippus mexicanus* has been assumed to be the type for the past 108 years. For the sake of nomenclatural stability, I followed the decision reached by Bonnet.

Sosippinus: Sosippus californicus Simon, 1898a, by original designation.

Hippasella: Hippasella nitida Mello-Leitão, 1944, by original designation.

Diagnosis.—Anterior eye row (AER), as seen from in front, procurved (Fig. 2) Anterior lateral eyes (ALE) subequal to anterior median eyes (AME) and mounted on distinct tubercles. AER wider than posterior median eye row (PMR), the PLE row wider than the anterior row. Chelicerae robust, with prominent bosses. Anterior cheliceral margin with three teeth on each side, the central tooth largest. Posterior cheliceral margin with three or four teeth on each side (rarely five); usually constant within a species. Labium longer than wide, as long as wide, or slightly wider than long. Endites heavily scopulate, slightly converging in front of labium, which is less heavily scopulate. Carapace with conspicuous longitudinal thoracic groove or foveae. Carapace of females highest in the cephalic region, of males usually highest in the thoracic region. Sternum always longer



Figures 20–23.—*Sosippus janus*. 20, 21. Male from NE. shore of Lake Lochloosa, Alachua County, Florida: 20. Left palp, ventral view; 21. Left palp, retrolateral view. 22, 23. Female from NE shore of Lake Lochloosa, Alachua County, Florida 22. Vulva, dorsal view; 23 Epigynum, ventral view.

than wide. Order of leg length: IV, I, II, III. Leg IV longest. Tarsi and metatarsi of legs I and II heavily scopulate; tibia I and II usually scopulate at distal ends. Males with legs longer than those of females and more heavily scopulate. For a more detailed discussion of the number of teeth on the posterior margin of the chelicerae, used as a diagnostic character at the generic level by previous authors, see Brady (1962, 1972). Sierwald (2000) was mistaken about *S. mimus* having four posterior cheliceral teeth on each side.

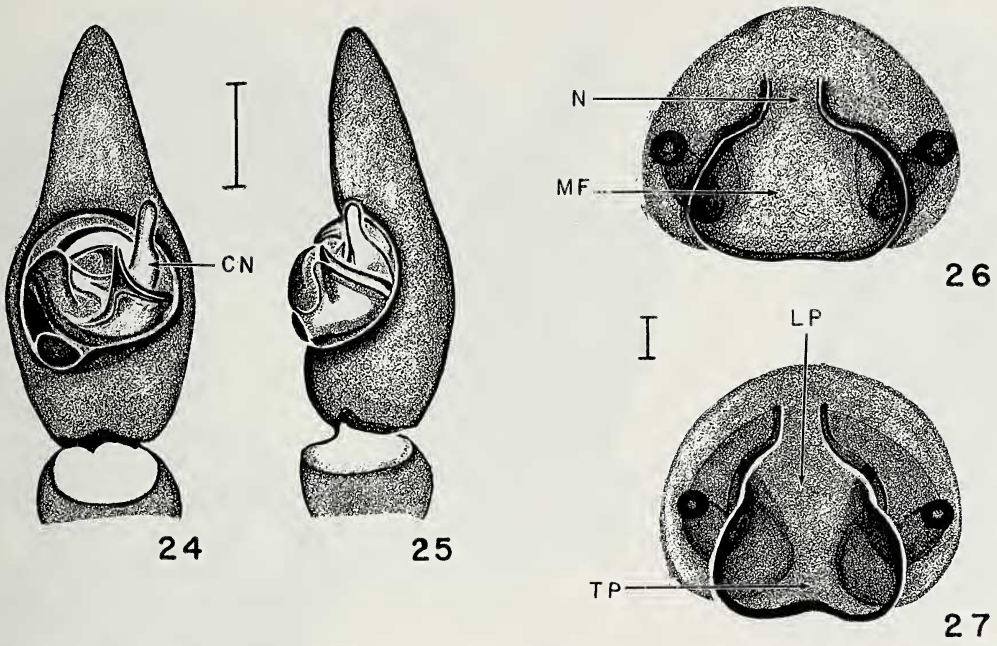
KEY TO SPECIES

1. Four posterior cheliceral teeth 2
   Three posterior cheliceral teeth 3

2(1). Carapace with a distinct white median stripe beginning at second eye row and continuing to posterior edge; and with two broad white submarginal stripes as in Fig. 4. Epigynum as in Fig. 26, figs. 18, 19 (Brady 1962), figs. 10–13, 19–24 (Brady 1972). Palpus as in figs. 40–43 (Brady 1962). Throughout Florida Peninsula ..... *Sosippus floridanus*
   Carapace without a distinct median white stripe running length of carapace, and without distinct white submarginal stripes as in Fig. 12. Epigynum as in Figs. 22, 23, 27, figs. 14–18 (Brady 1972). Palpus as in Figs. 20, 21. Northern Florida and southern Georgia ..... *Sosippus janus*

3(2). Sternum and ventral surface of abdomen bright orange. Dorsal pattern as in Fig. 13. Epigynum as in Figs. 18, 19, figs. 25–27 (Brady 1972). Palpus as in Figs. 16, 17. Southern Florida near Lake Placid ..... *Sosippus placidus*
   Sternum and ventral surface of abdomen cream to brownish yellow 4

4(3). Without a conspicuous median white stripe running length of carapace and without distinct submarginal white stripes 5
   With a definite median white stripe beginning behind second eye row and continuing to posterior edge of carapace, and with distinct broad white marginal or submarginal stripes 7



Figures 24–27.—*Sosippus* species. 24, 25. *S. mimus*. Male from Fountain Bleau State Park, Saint Tammany Parish, Louisiana: 24. Left palp, ventral view; 25. Left palp, retrolateral view. 26. *S. floridanus*. Female from 1.6 km E of Horse Creek, De Soto County, Florida. 27. *S. janus*. Female from Okefenokee Swamp State Park near Waycross, Ware County, Georgia. Abbreviations: CN, conductor of embolus; LP, longitudinal piece of middle field of epigynum; MF, middle field of epigynum; N, neck of MF of epigynum; TP, transverse piece of MF of epigynum.

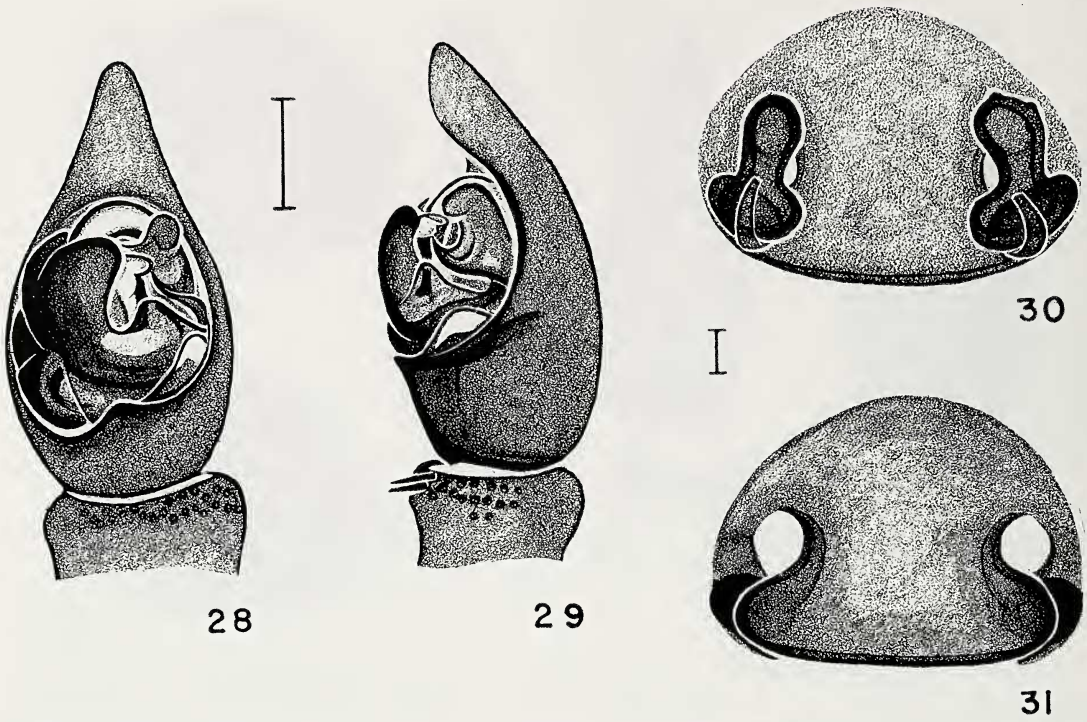
5(4). Mostly black in color without distinct lighter markings as in Fig. 8. Epigynum as in figs. 25, 26 (Brady 1962). High elevations in Mexico ..... *Sosippus plutonus*
Dark brown or gray with distinct white dashes behind posterior lateral eyes (PLE) and white dots on dorsum of abdomen as in Figs. 5, 6, figs. 3, 4 (Brady 1962) 6

6(5). Dorsal pattern as in Fig. 5. Epigynum as in figs. 15, 16 (Brady 1962), figs. 19–24 (Brady 1972). Palpus as in Figs. 24, 25, figs. 34, 35 (Brady 1962). North and western Florida to eastern Louisiana ..... *Sosippus mimus*
Dorsal pattern as in Fig. 6. Epigynum as in figs. 21, 22 (Brady 1962). Palpus as in figs. 37–39 (Brady 1962). Found in southern Texas ..... *Sosippus texanus*

7(4). Abdomen with wide median brown stripe bordered by white lines at the anterior end; these lines broken into a series of posterior white dashes. No white chevrons crossing the wide median brown stripe, as in Fig. 9. Epigynum as in figs. 23, 24 (Brady 1962). Palpus as in figs. 46, 47 (Brady 1962) ..... *Sosippus mexicanus*
Abdomen with wide median brown stripe with indentations accented by white spots anteriorly and with a series of white chevrons crossing the median stripe posteriorly as in Figs. 7, 14, 15 8

8(7). Epigynum with a broad neck and greatly expanded median field as in Figs. 30, 31. Palpus as in Figs. 28, 29 ..... *Sosippus michoacanus*
Epigynum with a relatively narrow neck and rounded (spade-shaped) median field as in Figs. 34, 35, 38, 39. Palpus as in Figs. 32, 33, 36, 37 9

9(8). Dorsal pattern as in Fig. 7. Epigynum as in figs. 27, 28 (Brady 1962). Palpus as in figs. 44, 45 (Brady 1962) ..... *Sosippus californicus*
Dorsal pattern as in Figs. 11, 15. Epigynum as in Figs. 34, 35, 38, 39, figs. 29, 30 (Brady 1962). Palpus as in Figs. 32, 33, 36, 37 ..... *Sosippus agalenoides*



Figures 28–31.—*Sosippus michoacanus*. 28, 29. Male from 12.8 km SW of Colima, Colima, Mexico: 28. Left palp, ventral view; 29 Left palp, retrolateral view. 30, 31. *S. michoacanus*. Female from 12.8 km SW of Colima, Colima, Mexico: 30 Vulva, dorsal view; 31 Epigynum, ventral view.

Sosippus placidus Brady 1972
Figs. 13, 16–19, 40

Sosippus mimus [in part]: Brady 1962:156, figs. 34, 35.

Sosippus placidus Brady 1972:46, figs, 25–27, 39; Platnick 1997:585; Sierwald 2000:134, figs. 1–9; Platnick 2006.

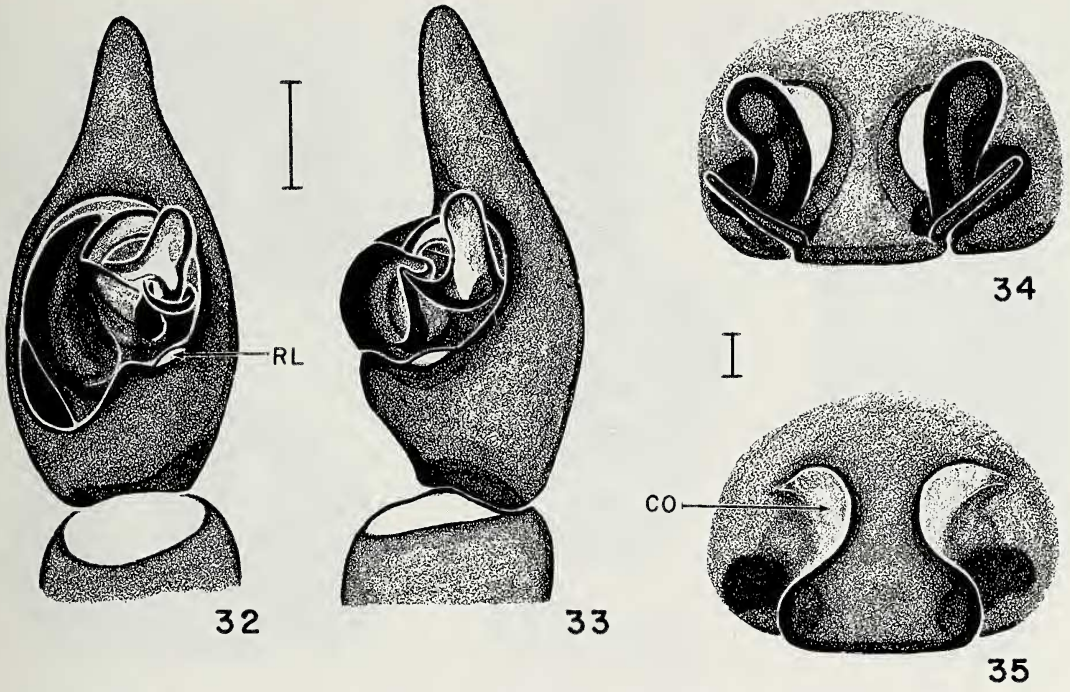
Material examined.—*Type:* USA: *Florida:* Highlands County: Holotype female, 9.6 km S. of Lake Placid, 27°11′N, 81°21′W, 12 June 1968, A.R. Brady, J. Toothaker (MCZ).

Other material: USA: *Florida:* Highlands County: 12 juveniles, Archbold Biological Station near Lake Placid, 27°11′N, 81°21′W, 24 January–4 February 1943, M. Cazier (AMNH); 2 ♀, 7 juveniles, 9.6 km S. of Lake Placid, 12 June 1968, A.R. Brady, J. Toothaker (HCC); 1 ♂, 3 ♀, same location, 1 June 1973, A.R. Brady (HCC); 2 ♂, 4 ♀, 1 juvenile, same location, 29 June 1978, A.R., M.A., K.D. Brady (HCC).

Etymology.—Latin adjective derived from geographic locality, Lake Placid, Florida.

Diagnosis.—*Sosippus placidus* is recognized by its striking red-orange ventral surface, 3-3 posterior cheliceral teeth, and distinct epigynum (Figs. 18, 19). It differs from *S. floridanus*, its closest relative geographically, in number of checliceral teeth (*floridanus* with 4-4), color pattern (compare Fig. 13 with Fig. 4), and structure of the epigynum (compare Figs. 18, 19 with Fig. 26 and figs. 18, 19 (Brady 1962), figs. 10–13, 19–24 (Brady 1972). *Sosippus placidus* agrees somewhat with *S. mimus* in dorsal color pattern (compare Fig. 13 with Fig. 5), but is distinguished from that species by its red-orange ventral surface, distinct epigynum, and geographic location.

Color.—*Female:* Pattern as in fig. 39 (Brady 1972). Face dark reddish brown with broad marginal stripes of paler orange-brown due to covering of white setae. Pattern of dark lines radiating from thoracic groove as in male. Dorsum of abdomen dark brown with five pairs of white spots connected by white chevrons on posterior half. Venter of abdomen bright yellow-orange. Legs brown with alter-



Figures 32–35.—*Sosippus agalenoides*. 32, 33. Male from Santa Ana near San Jose, San Jose, Costa Rica: 32. Left palp, ventral view; 33. Left palp, retrolateral view. 34, 35. *S. agalenoides*. Female from Santa Ana near San Jose, San Jose, Costa Rica: 33. Vulva, dorsal view; 35. Epigynum, ventral view. Abbreviations: RL, retrolateral lobe of epigynum; CO, copulatory opening.

nating light and dusky bands dorsally. Coxae and trochanters bright orange, conspicuously so on ventral surfaces. Labium and endites dark red-orange with lighter yellowish distal ends. Sternum bright yellow-orange.

Male: Pattern illustrated in Fig. 13. Face reddish brown, black in eye region, with lateral areas (cheeks) lighter orange brown due to clothing of short white setae. Carapace dark reddish brown (mahogany) with lighter, ill-defined submarginal stripes. Pattern of dark lines radiating from thoracic groove (Fig. 13). Dorsum of abdomen brown with dark brown cardiac area and a series of four to five white transverse chevrons diminishing in size posteriorly. Lateral edge of chevrons with white spots (Fig. 13.). Venter tan to pale yellow-brown with slight orange cast. Legs brown with faint dusky bands visible on dorsal surfaces. Coxae and trochanters bright orange on ventral surfaces. Labium and endites darker red orange with lighter splotches at distal ends. Sternum bright orange.

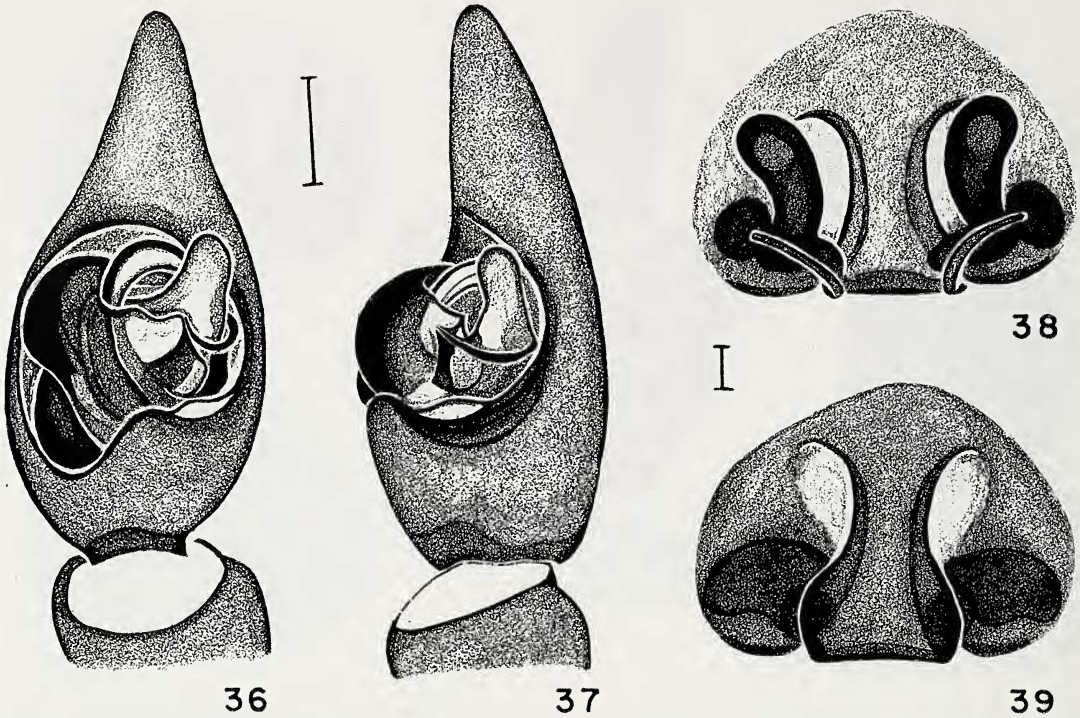
Measurements.—Eight females and two males of *Sosippus placidus*. See Table 2.

Natural history.—*Sosippus placidus* was collected in a very dry area of scrub vegetation, including *Opuntia* (Brady 1972, figs. 44, 45). This species appears to have different habitat preferences and also apparently a different breeding season than populations of *S. floridanus* in its vicinity. The area where *S. placidus* has been encountered was represented by Red Hill Island during the Aftonion Interglacial (Laessle 1958). Its restricted geographic distribution seems to be directly related to its former insular distribution discussed in the Introduction.

Distribution.—Highlands County, Florida.

Sosippus floridanus Simon 1898
Figs. 4, 26, 40

Sosippus floridanus Simon 1898a:25; Simon 1898b: 323, 325; Banks 1904:121, 135; Comstock 1913: 622; Chamberlin 1908:293; Comstock 1940:639; Wallace 1950:76; Roewer 1955:314; Bonnet 1958:4093; Roewer 1960:1004; Brady 1962:151, figs. 1, 19–20, 40–43; Brady 1972:33, figs. 10–13, 19–24; Platnick 1997:585; Platnick 2006.



Figures 36–39.—*Sosippus agalenoides*. 36, 37. Male from Puntarenas, Puntarenas, Costa Rica: 36. Left palp, ventral view; 37. Left palp, retrolateral view. 38, 39. Female from San Jose, San Jose, Costa Rica: 38. Vulva, dorsal view; 39. Epigynum, ventral view.

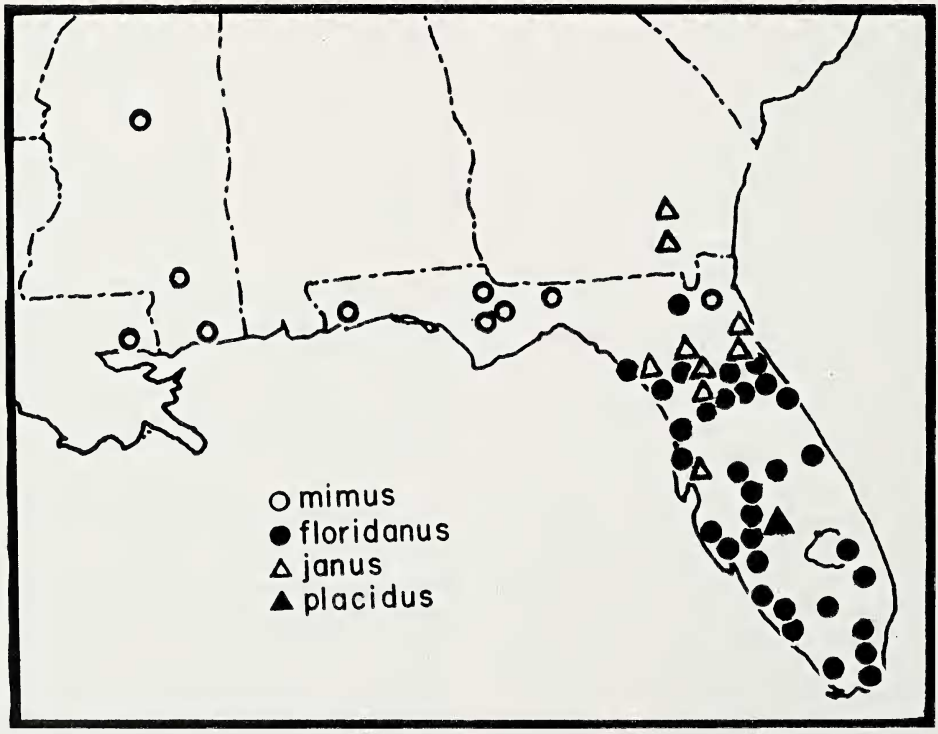


Figure 40.—Distribution map of four *Sosippus* species in southeastern USA.

Table 2.—Dimensions of *Sosippus placidus*.

	Mean (Range)		Mean (Range)
	Females (n = 8)		
Anterior eye row	1.71 (1.5–1.9)	Femur I	6.78 (5.7–7.7)
PME width	1.40 (1.2–1.6)	Patella-Tibia I	8.46 (6.9–9.4)
PLE width	2.12 (1.8–2.4)	Metatarsus I	5.19 (4.1–6.3)
POQ length	1.20 (1.1–1.4)	Tarsus I	3.11 (2.7–3.6)
Car. width at PLE	3.71 (3.3–4.1)	Total I	23.54 (19.4–27.0)
Carapace width	5.53 (4.8–6.3)	Femur IV	7.95 (7.3–7.8)
Carapace length	8.01 (6.7-9.1)	Patella-Tibia IV	9.32 (7.8–10.5)
Body length	15.75 (14.2–17.6)	Metatarsus IV	7.85 (6.8–8.9)
Patella-Tibia II	7.95 (7.3–9.0)	Tarsus IV	3.60 (2.9–4.0)
Patella-Tibia III	6.85 (6.0–7.8)	Total IV	28.66 (24.2–31.8)
	Males (n = 2)		
Anterior eye row	1.4, 1.6	Femur I	8.0, 8.9
PME width	1.2, 1.3	Patella-tibia I	10.2, 12.2
PLE width	1.8, 1.9	Metatarsus I	7.0, 9.0
POQ length	1.0, 1.0	Tarsus I	4.3, 5.4
Car. width at PLE	2.9, 3.2	Total I	29.5, 35.6
Carapace width	4.6, 6.1	Femur IV	9.3, 10.5
Carapace length	7.0, 9.0	Patella-Tibia IV	11.4, 13.6
Body length	15.1, 16.7	Metatarsus IV	12.2, 13.6
Patella-Tibia II	9.7, 11.4	Tarsus IV	5.1, 6.1
Patella-Tibia III	8.6, 10.2	Total IV	38.1, 43.8

Material examined.—*Type:* USA: *Florida:* female holotype without further locality data, (MNHN), not examined.

Other material: The following are localities not reported in Brady (1962): USA: *Georgia:* Crisp County: 1 ♀, 11.7 km N. of Cordele, 31°58′N, 83°47′W, 30 May 1964, A.R. Brady (HCC). *Florida:* Alachua County: 1 ♀, 24 March 1933, H.K. Wallace (FSCA); 1 ♀, 18 May 1936, H.K. Wallace (FSCA); 1 ♂, Gainesville, 29°39′N, 82°19′W, 2 April 1956, H.V. Weems, Jr. (FSCA); 1 ♂, same location, 23 March 1959 H. V. Weems, Jr. (FSCA); 1 ♂, same location, 7 August 1962, R.E. Woodruff (FSCA); 1 ♀, same location, 19 July 1963, J.F. Anderson (FSCA); Brevard County: 1 ♂, Cocoa, 28°23′N, 80°45′W, 23 February 1936, H.K. Wallace (FSCA); Collier County: 1 ♀, Naples, 26°09′N, 81°48′W, 3 March 1936, H.K. Wallace (FSCA); Dade County: 1 ♂, Everglades National Park, 29 January 1959, H.V. Weems, Jr. (FSCA); 1 ♀, 11.2 km W. of Florida City, 25°27′N, 80°29′W, 31 March 1957, R. Forster, W.J. Gertsch (AMNH); Desoto County: 1 ♂, 2 ♀, Brownville, 27°18′N, 81°40′W, 4 March 1936, Bishop (AMNH); 4 ♂, 9 ♀, Horse Creek, 0.8 km E. of St. Highway 72, 27°13′N, 81°51′W, 12 June 1968, A.R. Brady, J. Toothaker (HCC); Highlands County: 1 ♀, 29 June 1935, H.K. Wallace (FSCA); 2 ♀, Archbold Biological Station, 27°11′N, 81°20′W, 20 June 1962, A.R. Brady (HCC); 3 ♀, Highlands Hammock State Park, 27°30′N, 81°26′W, 19 June 1962, A.R. Brady (HCC); Lee County: 2 ♀, 14 April 1949 (FSCA); Levy County: 1 ♀, 9 April 1937, H.K. Wallace (FSCA); 5 ♂, 6 ♀, Cedar Key, 20°08′N, 83°02′W, 2 June 1964, A.R. Brady, J. Reiskind, P. Tongiorgi (HCC); 5 ♂, 8 ♀, same location, 9 June 1968 A.R. Brady, J. Toothaker (HCC); Marion County: 1 ♂, Ocala National Forest, 27°18′N, 81°22′W, 26 April 1969, H.K. Wallace (FSCA); Pasco County: 6 ♀, Aripeka, 28°26′N, 82°40′W, 2 June 1964, A.R. Brady, J. Reiskind (HCC); 2 ♂, 2 ♀, same location, 13 June 1968, A.R. Brady, J. Toothaker (HCC).

Etymology.—Latin adjective derived from the type locality, the state of Florida.

Diagnosis.—*Sosippus floridanus* is most similar to *S. janus*. *Sosippus floridanus* can be distinguished by the pattern of bold white longitudinal stripes on the carapace (Fig. 4, figs. 34–38 in Brady 1972). In *S. janus* the carapace pattern is more diffuse and there are no distinct longitudinal stripes (Fig. 12, figs. 40,

Table 3.—Dimensions of *Sosippus floridanus* from Cedar Key and Aripeka along the Gulf coast of Florida.

	Mean (Range)		Mean (Range)
	Females (n = 10)		
Anterior eye row	1.62 (1.3–1.9)	Femur I	5.71 (4.3–6.7)
PME width	1.41 (1.2–1.6)	Patella-Tibia I	6.89 (5.3–8.3)
PLE width	2.04 (1.6–2.4)	Metatarsus I	4.16 (3.2–5.1)
POQ length	1.24 (1.0–1.4)	Tarsus I	2.70 (2.3–3.2)
Car. width at PLE	3.43 (2.6–4.1)	Total I	19.42 (15.0–23.0)
Carapace width	5.29 (4.0–6.5)	Femur IV	6.53 (5.1–7.7)
Carapace length	7.52 (5.7–8.9)	Patella-Tibia IV	7.78 (6.0–9.0)
Body length	15.20 (11.1–20.2)	Metatarsus IV	6.90 (5.6–8.1)
Patella-Tibia II	6.34 (4.9–7.7)	Tarsus IV	3.26 (2.7–4.0)
Patella-Tibia III	5.71 (4.3–6.7)	Total IV	24.47 (19.3–28.9)
	Males (n = 10)		
Anterior eye row	1.28 (1.2–1.4)	Femur I	5.39 (4.8–6.5)
PME width	1.14 (1.0–1.2)	Patella-Tibia I	6.81 (6.2–8.0)
PLE width	1.60 (1.4–1.8)	Metatarsus I	4.14 (3.6–4.9)
POQ length	1.00 (0.9–1.1)	Tarsus I	2.85 (2.5–3.2)
Car. width at PLE	2.43 (2.0–2.8)	Total I	19.01 (17.0–22.6)
Carapace width	4.49 (3.9–5.4)	Femur IV	6.37 (5.6–7.5)
Carapace length	6.24 (5.4–7.1)	Patella-Tibia IV	7.62 (6.7–8.9)
Body length	12.11 (10.4–14.1)	Metatarsus IV	7.28 (6.7–8.8)
Patella-Tibia II	6.41 (5.6–7.6)	Tarsus IV	3.36 (2.9–3.7)
Patella-Tibia III	5.72 (4.9–6.8)	Total IV	24.62 (21.8–28.9)

41 in Brady 1972). The shapes of the epigyna in these two species are similar but consistently different (compare figs. 10–12 with figs. 13–17 in Brady 1972). In *S. floridanus* the edges of the middle field are straight or even (Fig. 26), while in *S. janus* they are indented or scalloped (Fig.27).

Color.—*Female:* Pattern illustrated in Fig. 4 and figs. 35, 37 (Brady 1972). Carapace dark brown, overlaid with black pubescence; black in eye region. Narrow median longitudinal white stripe beginning at second eye row and continuing to the posterior edge of carapace. Broad submarginal white stripes originating at edge of clypeus and running to the posterior edge of carapace. Chelicerae black, lighter orange brown boss on each side. Sternum brownish yellow. Endites and labium reddish brown; lighter at distal ends. Coxae light brownish yellow on ventral surface. Femora gray on ventral surfaces; dorsal surfaces brownish yellow background clothed with white pubescence with narrow gray bands at proximal and distal ends. Remaining leg segments brownish yellow, thickly clothed with black setae. Dorsum of abdomen with reddish brown lanceolate mark at base, enclosed by a wide black median stripe continuing posteriorly. Two pairs of white spots anteriorly followed by four white chevrons diminishing in size posteriorly. Lateral areas brown with scattered black spots. Venter of abdomen grayish brown.

Male: Pattern illustrated in figs. 34, 36 (Brady 1972). The white spots and chevrons on the dorsum of the abdomen are not as conspicuous as in the female, otherwise the coloration and markings are much the same.

Measurements.—Ten females and ten males of *Sosippus floridanus* from Cedar Key and Aripeka along the Gulf coast of Florida. See Table 3.

Natural history.—*Sosippus floridanus* was collected from tubular webs leading under the trunks of Palmetto bushes and into the bases of tufts of high grass in areas of white, sandy soil in several of the High Pine/Palmetto communities that are common through out the Florida peninsula. The webs were often not extensively developed, the tubular portions being hidden and the sheet portion of the web consisting of radiating lines of silk forming a very loose meshwork at the surface rather than a definite sheet. Near Cedar Key we

found large numbers of specimens in extensive sheet webs and tubular retreats made under fallen palm fronds. The ventral surfaces of femora I and II were much darker in many of these specimens than in previous collections examined. Also, the above measurements show these specimens to be somewhat larger on average than the specimens measured by Brady (1962), but within the range of expected variation. Some individuals from the Gulf coast populations exhibit epigyna that are shaped differently than the more common form of *S. floridanus* epigyna, but others have the more common form illustrated previously (Brady 1962, 1972). *Sosippus floridanus*, as presently viewed, is a widespread species in Florida, while other described species are more restricted ecologically and geographically. It is possible that more than one species is represented under this name.

Distribution.—Southern Georgia, throughout peninsular Florida, south to the Florida Keys.

Sosippus janus Brady 1972
Figs. 12, 20–23, 27, 40

Sosippus mimus Chamberlin: Brady 1962: fig. 17 (misidentification, in part, not *S. mimus*).
Sosippus janus Brady 1972:39, figs. 14–18, 40, 41; Platnick 2006.

Material examined.—*Type:* USA: *Florida:* female holotype, NW. shore of Lake Lochloosa, Alachua County, 29°31′N, 82°08′W, 10 June 1968, A.R. Brady, J. Toothaker (MCZ).

Other material: USA: *Georgia:* Ware County: 1 ♂, 4 ♀, Okefenokee Swamp State Park near Waycross, 29°31′N, 82°08′W, 16 June 1969, A.R. Brady (HCC); 2 ♂, 10 ♀, same location, 3 July 1987, A.R. Brady (HCC). *Florida:* Alachua County: 1 ♀, 14 June 1935, W. Ivie (AMNH); 1 ♀, 13 April 1950, H.K. Wallace (FSCA); 5 ♂, 3 ♀, 2 juveniles, NW shore of Lake Lochloosa, 29°31′N, 82°31′W, 11 April 1968, A.R. Brady, J. Reiskind, J. Toothaker (HCC); 20 ♀, 8 juveniles, same location, 10 June 1968, A.R. Brady, J. Toothaker (HCC); 1 ♂, 1 ♀, 2 juveniles, 4.3 km W. of Melrose, 29°43N, 82°03′W, 13 June 1968, A.R. Brady (HCC); Hillsborough County: 1 ♀, 4.8 km N. of Mango, 27°59′W, 82°18′W, 10 March 1976, H.W. Levi (MCZ); Levy County: 1 ♂, 2 ♀, 2 juveniles, 20 April 1935, H.K. Wallace (FSCA); Marion County: 1 ♀, Kerr Park near Lake Kerr, 29°21′N, 81°40′W, October 1956, H.K. Wallace (FSCA); Putnam County: 1 ♀, 2 May 1947, 3 June [year not indicated], H.K. Wallace (FSCA); 2 juveniles, Welaka Reserve, 29°29′N, 81°40′W, 11 November 1974; 4 ♀, same location, 26 May 1978, A.R. Brady (HCC); 1 ♂, same location, 22 May 1981, A.R. Brady (HCC); 1 ♂, 1 ♀, same location, 17 May 1985, A.R. Brady (HCC); 1 ♂, 3 ♀, same location, 16 May 1992, A.R. Brady (HCC); 2 juveniles, same location, 28 April 1993, A.R. Brady (HCC); St. Johns County: 3 ♀, 19.2 km N. of St. Augustine, 29°54′N, 81°19′W, 12 June 1935, H. K. Wallace (FSCA).

Etymology.—The name is a noun in apposition after the Roman god.

Diagnosis.—*Sosippus janus* is most similar to *S. floridanus* in characters of the male palpus and female epigynum, however, it resembles *S. mimus* more in color pattern. The lateral edges of the middle field of the epigynum in *S. janus* are indented or scalloped (Figs. 22, 23, 27), while in *S. floridanus* they are straight (Fig. 26, figs. 10–13, 19–24, Brady 1972). The shoulders or anterior margins below the neck of the middle field in *S. floridanus* are also usually squarer than in *S. janus*. The males can be distinguished by comparing color patterns (compare Fig. 12 with Fig. 4); and descriptions under *S. floridanus*. *Sosippus janus* has 4-4 posterior cheliceral teeth, unlike *S. mimus* which has 3-3 (Brady 1972). Present records also indicate that *S. mimus* does not occur in peninsular Florida.

Color.—*Female:* Pattern illustrated in fig. 41 (Brady 1972). Face dark reddish brown with white setae from ALE to outer lower edge of clypeus. Carapace dark reddish brown with margins of lighter color covered with white pubescence. Alternate dark and white lines radiating from thoracic groove. A median white stripe between PLE to thoracic groove and a pair of white stripes from inner edge of PME continuing to posterior cephalic region. Dorsum of abdomen with a wide dark brown median stripe bounded by lighter areas of brown intermixed with fine white setae. Four or five white chevrons sometimes faintly visible on posterior half. Venter of abdomen pale yellow to yellow brown above epigastric furrow, cream to brown below furrow and thickly clothed with white setae. Legs yellow

Table 4.—Dimensions of *Sosippus janus*.

	Mean (Range)		Mean (Range)
	Females (n = 10)		
Anterior eye row	1.66 (1.6–1.8)	Femur I	5.57 (5.0–6.0)
PME width	1.31 (1.2–1.4)	Patella-Tibia I	7.01 (6.5–7.3)
PLE width	1.99 (1.8–2.2)	Metatarsus I	4.12 (3.6–4.5)
POQ length	1.12 (1.0–1.2)	Tarsus I	2.70 (2.6–2.9)
Car. width at PLE	3.67 (3.5–4.0)	Total I	19.40 (18.0–20.5)
Carapace width	5.36 (4.8–5.8)	Femur IV	6.44 (5.7–6.7)
Carapace length	7.62 (6.9–8.1)	Patella-Tibia IV	7.61 (7.0–8.0)
Body length	15.44 (13.7–17.2)	Metatarsus IV	6.72 (6.3–7.0)
Patella-Tibia II	6.50 (6.1–6.7)	Tarsus IV	3.26 (3.0–3.5)
Patella-Tibia III	5.65 (5.3–6.1)	Total IV	24.02 (22.6–25.0)
	Males (n = 10)		
Anterior eye row	1.35 (1.2–1.5)	Femur I	5.63 (4.8–6.4)
PME width	1.14 (1.1–1.2)	Patella-Tibia I	7.33 (6.3–8.1)
PLE width	1.66 (1.5–1.8)	Metatarsus I	4.80 (4.0–5.3)
POQ length	0.98 (0.9–1.0)	Tarsus I	3.13 (2.8–3.6)
Car. width at PLE	2.89 (2.4–3.2)	Total I	21.01 (17.8–23.4)
Carapace width	4.81 (4.0–5.9)	Femur IV	6.57 (5.6–7.5)
Carapace length	6.54 (5.7–7.7)	Patella-Tibia IV	7.94 (6.8–8.6)
Body length	12.54 (10.2–14.8)	Metatarsus IV	7.71 (6.7–8.4)
Patella-Tibia II	6.90 (5.7–7.8)	Tarsus IV	3.63 (3.3–4.0)
Patella-Tibia III	6.06 (4.9–6.9)	Total IV	25.82 (22.3–28.3)

brown to orange brown; coxae lighter, yellow orange on ventral surface. Labium and endites dark brown with lighter yellowish distal ends. Sternum yellow-brown.

Male: Pattern illustrated in Fig. 5 and fig. 40 (Brady 1972). Face dark reddish brown with broad white stripes on each side extending from below PME diagonally downward toward cheliceral condyles. Eye region black. Chelicerae dark reddish brown, black distally. Palpus brownish yellow to brown. Carapace reddish brown with three stripes of white setae in cephalic region: a median stripe beginning between PLE and extending to thoracic groove, a pair of white stripes beginning inside PLE continuing diagonally tangent to inner surface of PLE and then straight back to posterior edge of cephalic region. Four pairs of dark lines radiating from thoracic groove. Edge of carapace heavily clothed with white setae, forming an indistinct light marginal stripe. Dorsum of abdomen with broad median brown stripe; lighter laterally and along the sides, mottled brown with white pubescence. Five pairs of white spots at edges of median stripe; the posterior pair sometimes connected, forming a white chevron. Venter of abdomen with broad median yellowish brown stripe bordered by light brown, clothed with fine white setae. In some cases a pair of thin brown stripes is visible within the broader pale median one. These run lateral to the genital area and converge posteriorly. Labium and endites orange to yellow-brown with distal ends pale yellow to cream. Sternum pale orange to light brownish yellow.

Measurements.—Ten females and ten males of *Sosippus janus*. See Table 4.

Natural history.—*Sosippus janus* is common in the mesic habitats surrounding Lake Lochloosa in Alachua County, Florida, characterized by Live Oak (*Quercus virginiana*) and Spanish Moss (Brady 1972, fig. 43). Since 1972 this species has been collected on numerous occasions at the Welaka Reserve. Here it occurred in moist areas of tall (0.3–0.6 m) herbaceous vegetation growing in roadside drainage ditches, in herbaceous vegetation at the edge of trails cut through pine and mixed hardwood, and in the Live Oak woodland near shoreline along the St. Johns River. At the above two localities adult males were found in mid-April through mid-May, adult females appeared in late April and mid-May and in some abundance by late May and June. Females with egg cases were prevalent in June.

This species matures much earlier than *Rabidosa rabida* and *Hogna ammophila* (Wallace, 1942), two large lycosids occurring in the same habitats. When collecting this species during morning hours at the Welaka Reserve, we found their webs often heavily coated with condensed moisture or dew. As a corollary when *S. janus* was reared in the laboratory, we found that it required considerable moisture to survive. These observations suggest a need for moisture or high humidity by these spiders, and partially explain the restriction of *S. janus* to mesic habitats.

Accompanied by Pat and Gary Miller in July 1987, I had the opportunity to return to Okefenokee Swamp State Park near Waycross, Georgia, where I had collected several specimens of unidentified *Sosippus* in 1969. We found an additional dozen mature specimens in drainage ditches along the roadside in wooded areas. Upon closer examination, these specimens were recognized as *S. janus*. This discovery near Waycross, Georgia, extended the range of this species 240 km northward and again confirmed its occurrence in mesic or moist habitats.

At Welaka Reserve we observed a number of instances of young spiderlings, some obviously representing different instars, living in the funnel retreats and on the platforms of sheet webs with the females. In the laboratory, where we reared specimens in five-gallon aquaria, we observed cooperative feeding by the young spiders on larger prey items, such as crickets. In one case the adult female subdued a large cricket and the young joined in the meal. When we reared spiderlings of *A. georgicola* in 5-gallon (18.9 l) aquaria, we found that they needed to be separated after several instars or only one individual would be found after a couple of days. In the case of *S. janus*, when two individuals were maintained in five gallon aquaria, they remained compatible for four or five instars, usually constructing sheet webs in opposite corners of the container. The feeding regimen was the same in both of these species. In one unusual case a single individual of *S. janus* never made a web of its own but remained near the edge of the web of another spider, presumably subsisting on prey items captured in the common web.

Distribution.—North of the Okefenokee Swamp near Waycross,Georgia to northern Florida; usually in mesic environments.

Sosippus mimus Chamberlin 1924
Figs. 5, 24, 25, 40

Sosippus mimus Chamberlin 1924:27; Comstock 1940:639; Bonnet 1958:4093; Brady 1962:156, figs. 2, 3, 13–17, 34, 35: Brady 1972:35, figs. 1–9, 2833; Platnick 2006.

Sosippinus mimus (Chamberlin): Roewer 1955:313; Roewer 1960:1002.

Material examined.—*Type:* USA: *Louisiana:* Saint Tamminy Parish: female holotype, Mandeville, 30°21′N, 90°04′W, 1 May 1921, H.E. Hubert (MCZ).

Other material: USA: *Florida:* Bay County: 1 ♂, 3 ♀, 3 juveniles, 11.2 km S. of Youngstown on US 231, 30°22′N, 85°26′W, 20 June 1968, A.R. Brady, J. Toothaker (HCC); Calhoun County: 1 ♂, Blountstown, 30°27, 85°03′W, 17 April 1938, W.J. Gertsch (AMNH); Escambia County: 2 juveniles, 18 June [year not indicated], H.K. Wallace (FSCA); Jackson County: 1 ♂, 3 April 1953, H.K. Wallace (FSCA); Leon County: 12 ♂, 4 ♀, 5 juveniles, Tall Timbers Research Station, 13 October 1969, June 1970, D.L. Harris (FSCA); Liberty County: 1 ♂, 2–4 June 1952 (HCC); 1 ♂, 5.9 km E. of Torreya State Park, 30°34′N, 84°57′W, 31 May 1964, A.R. Brady (HCC); *Mississippi.* Forrest County: 2 juveniles, Hattiesburg, 31°20′N, 89°17′W, 2–6 January 1942, E.L. Bell (AMNH); Jackson County: 5 ♀, Magnolia State Park near Biloxi, 30°24′N, 88°53W, 18 June 1968, A.R. Brady, J. Toothaker (HCC); 1 ♂, Ocean Springs, 30°25′N, 88°50W, 10 May 1931, Dietrich (FSCA); Rankin County: 1 ♂, Thompson field (HCC), 8–12 April, T.C. Lockley (HCC); 1 ♂, same location, 13–15 May 1983, T.C. Lockley (HCC). *Louisiana:* Saint Tammany Parish: 3 ♂, 11 ♀, 1 juvenile, Fountainbleau State Park near Mandeville, 30°21′N, 90°04′W, 17,18 June 1968, A.R. Brady, J. Toothaker (HCC); 1 ♀, Mandeville, 1 May 1921, H.E. Hubert (AMNH).

Etymology.—The name is a noun in apposition based upon the resemblance (mimicry) of this species to the three species previously described by Simon, *S. mexicanus*, *S. californicus* and *S. floridanus*.

Diagnosis.—*Sosippus mimus* is like *S. texanus* in dorsal color pattern and having three

Table 5.—Dimensions of *Sosippus mimus*.

	Mean (Range)		Mean (Range)
	Females (n = 10)		
Anterior eye row	1.47 (1.3–1.6)	Femur I	5.23 (4.7–6.0)
PME width	1.24 (1.1–1.3)	Patella-Tibia I	6.61 (5.7–7.5)
PLE width	1.85 (1.7–2.1)	Metatarsus I	3.87 (3.5–4.4)
POQ length	1.07 (1.0–1.2)	Tarsus I	2.51 (2.3–2.9)
Car. width at PLE	3.16 (2.8–3.6)	Total I	18.22 (16.1–20.8)
Carapace width	4.77 (4.2–5.4)	Femur IV	6.18 (5.5–6.8)
Carapace length	6.89 (5.8–8.9)	Patella-Tibia IV	7.33 (6.4–8.4)
Body length	15.16 (10.2–16.4)	Metatarsus IV	6.42 (5.7–7.2)
Patella-Tibia II	6.16 (5.2–7.1)	Tarsus IV	3.13 (2.7–3.6)
Patella-Tibia III	5.43 (4.8–6.1)	Total IV	23.01 (20.2–25.9)
	Males (n = 5)		
Anterior eye row	1.40 (1.2–1.6)	Femur I	6.05 (5.3–6.7)
PME width	1.19 (1.1–1.4)	Patella-Tibia I	7.81 (6.7–8.5)
PLE width	1.75 (1.6–2.0)	Metatarsus I	4.88 (4.4–5.2)
POQ length	1.00 (0.9–1.1)	Tarsus I	3.02 (2.8–3.3)
Car. width at PLE	2.79 (2.5–3.1)	Total I	21.75 (19.2–23.7)
Carapace width	4.90 (4.2–5.8)	Femur IV	7.09 (6.3–8.0)
Carapace length	7.18 (5.6–8.4)	Patella-Tibia IV	8.34 (7.3–9.3)
Body length	13.79 (11.1–15.9)	Metatarsus IV	8.11 (7.5–9.0)
Patella-Tibia II	7.51 (6.7–8.2)	Tarsus IV	3.86 (3.5–4.1)
Patella-Tibia III	6.74 (5.9–7.7)	Total IV	27.40 (24.7–30.5)

teeth on each side of the posterior margin of the cheliceral fang groove, however, the structure of the female epigyna is different in these two species (compare figs. 1–9 of Brady 1972 with figs. 21, 22 of Brady 1962). Specimens of *S. texanus* are also larger in average size (compare Table 5 with Table 6). *Sosippus placidus* has 3-3 posterior cheliceral teeth and a similar dorsal pattern, but is easily distinguished by the orange color on the ventral surface of the cephalothorax and abdomen. The structure of the female epigynum in *S. placidus* is also quite distinct (Figs. 18, 19, figs. 25–27 of Brady 1972). Although *S. janus* has a similar dorsal color pattern to *S. mimus*, it has four teeth on each side of the posterior cheliceral groove.

Color.—*Female:* Pattern illustrated in Fig. 5 and figs. 29–31 (Brady 1972). Carapace dark reddish brown or mahogany; darkest in eye region with eyes circled in black. Three longitudinal stripes beginning between PME; consisting of a median stripe continuing posterior to thoracic groove and two lateral stripes passing inside of PME and ending in the cephalic region. These stripes yellowish white in color. No distinct stripe along margins of carapace; diffuse yellowish white setae instead. Black lines radiating from thoracic groove, accented by very fine yellowish white setae. Chelicerae black, clothed with large black setae, with orange brown boss on each side. Sternum yellowish brown. Labium and endites orange-brown, lighter at distal ends. Leg segments yellowish brown without distinct banding. Ventral surface of femora sometimes having a gray appearance due to heavy clothing of black setae. Dorsal surface of femora clothed with short white setae.

Dorsum of abdomen with a wide brown median stripe from the base of the abdomen to the posterior end, interrupted at intervals. An anterior pair of white spots at lateral edges of median stripe, followed by a series of five white chevrons crossing the median stripe; the ends of the chevrons merging with white spots at the lateral edges of abdomen. Bands of brown dots alternately crossing the median stripe with the chevrons. Lateral areas of dorsum yellowish brown; mottled with darker brown. Venter of abdomen brownish yellow.

Male: Pattern illustrated in fig. 28 (Brady 1972). The pattern in the male is very similar to that of the female described above, except that thick lighter setae along the edges of the

Table 6.—Dimensions of *Sosippus texanus*. Standard deviations of measurements of females made by Brady (1962) were used to calculate 95% confidence limits (C.L.) that are comparable to the ranges listed for other species. Males represent new specimens.

	Mean (C.L.)		Mean (C.L.)
	Females (n = 10)		
Anterior eye row	1.79 (1.6–2.0)	Femur IV	7.43 (6.3–8.6)
PME width	1.46 (1.3–1.6)	Patella-Tibia IV	8.86 (7.6–10.1)
PLE width	2.22 (2.0–2.5)	Metatarsus IV	7.30 (6.4–8.2)
POQ length	1.31 (1.2–1.4)	Tarsus IV	3.74 (3.2–4.3)
Carapace width	6.25 (5.3–7.2)	Total IV	27.33 (23.5–31.1)
Carapace length	8.61 (7.3–9.9)		
Body length	17.88 (15.6–20.2)		
	Males (n = 5, except *n = 4)		
Anterior eye row	1.73 (1.6–1.9)	Femur I	7.45 (6.9–8.4)*
PME width	1.40 (1.3–1.5)	Patella-Tibia I	9.62 (9.2–10.6)*
PLE width	2.08 (2.0–2.2)	Metatarsus I	6.52 (6.1–7.2)*
POQ length	1.21 (1.1–1.3)	Tarsus I	4.12 (3.9–4.4)*
Car. width at PME	3.81 (3.4–4.2)*	Total I	27.70 (26.1–30.6)*
Carapace width	6.52 (5.8–7.1)	Femur IV	9.18 (8.5–10.1)
Carapace length	8.83 (8.2–9.5)	Patella-Tibia IV	11.04 (10.1–11.8)
Body length	18.04 (16.5–20.1)	Metatarsus IV	10.61 (9.7–11.0)
Patella-Tibia II	9.35 (8.9–10.4)*	Tarsus IV	5.17 (4.7–5.5)
Patella-Tibia III	8.22 (7.6–9.0)*	Total IV	34.61 (33.0–38.4)

carapace often create yellowish white submarginal stripes.

Measurements.—Ten females and five males of *Sosippus mimus*. Table 5.

Natural history.—During 17–20 June 1968, Jim Toothaker and I collected *Sosippus mimus* from a substrate of sandy soil in wooded areas and in open fields from eastern Louisiana to western Florida. Like other species of *Sosippus* it occurred commonly in disturbed habitats, for example, fields that had been cleared for construction, fire breaks, and garbage dumps. Tubular retreats were built at an angle into the sides of banks, ruts and furrows. Extending from the tubular part of the web was a sheet or platform. Commonly the tubular portion of the web would lead under a log or other cover in which case it might extend for 9–12 inches (23–30 cm). The posterior end of the tube often appeared to be open, apparently serving as a means of retreat for the spider when disturbed. In cases where the retreat led to a dead-end in a hole or depression, there were side avenues for escape. These webs closely resemble those of *Agelenopsis* species, which also occurred in the same habitat. The specimens of *Agelenopsis* were immature, whereas most of the *S. mimus* were mature and some were carrying egg cases. The egg case is carried attached to the spinnerets as in other lycosids (fig. 30, Brady 1972).

D. L. Harris, utilizing pitfall traps at Tall Timbers Research Station, recovered immature specimens from 13 October 1969 through 27 April 1970. Males were found in these traps beginning May 4 and continuing until 22 June 1970. Four females appeared in the traps from 11–25 April 1970.

Distribution.—Western Florida to Louisiana (Map 1).

Sosippus texanus Brady 1962
Figs. 6, 41

Sosippus texanus Brady 1962:160; Platnick 2006.

Material examined.—*Type:* USA: *Texas:* Female holotype, Goose Island State Park, Aransas County, 28°01′N, 97°03′W, 15 June 1961, A.R. Brady (MCZ).

Other material: USA: *Texas:* Aransas County: 4 juveniles, Goose Island State Park, 28°01′N, 97°03′W, 7 March 1959, A.R. Brady (HCC); 2 ♂, 2 ♀, same locality, 15 June 1961, A.R. Brady (HCC); Cameron County: 1 ♀, Brownsville, 25°54′N, 97°30W, 30 November 1934 S. Mulaik (AMNH); Hidalgo County: 4 ♂, 2 ♀, Bentsen State Park, 29 June 1962, A.R. Brady (HCC); 1 ♀, same location, 5 July

Figure 41.—Distribution map of *Sosippus texanus* in southern Texas and northeastern Mexico.

1972, A.R. Brady, A. Jung (HCC); 1 ♀, Edinburg, 26°18′N, 98°10′W, September–December 1933, S. Mulaik (AMNH); 2 ♀, La Joya, 26°15′N, 98°29′W, 30 October 1938, L.I. Davis (AMNH); 1 ♀, Resaca, 8 km SE. of Brownsville, 25°54′N, 97°30′W, 26 September 1937, L.I. Davis, M. Fones (AMNH); Zapata County: 1 ♀, Lopeno, 26°43′N, 99°07W, 15 April 1952, Willie (AMNH).

Etymology.—Latin adjective derived from the type locality, the state of Texas.

Diagnosis.—*Sosippus texanus* is close to *S. mimus* in color pattern. *Sosippus texanus* is larger and darker in color with white spots and chevrons on the abdomen that are usually more conspicuous than in *S. mimus* (compare Fig. 6 with Fig. 5). Male palpal organs are similar (compare figs. 37–39 with Figs. 24, 25, and figs. 34, 35 of Brady 1962), but the epigyna are quite distinct (compare figs. 21, 22 to figs.15, 16 of Brady 1962).

Color.—*Female:* Pattern illustrated in Figure 6. Carapace dark brown covered with black pubescence; black in eye region. Cephalic region of the carapace with three longitudinal white stripes; one median and two lateral ones that pass on the inside of the PLE and end at edge of cephalic region. No well-defined lighter marginal stripes. Sides of cephalic region with a vertical white band behind the clypeus, followed by a black band, then another white band below PLE. Black lines, accented with white setae, radiating from the thoracic groove. Chelicerae black, clothed with long black setae, conspicuous orange-brown boss on each side. Sternum yellowish brown. Endites and labium dark reddish brown, brownish yellow at distal ends. Ventral surface of coxae yellowish brown. Femora gray-brown on ventral surfaces. White setae on dorsal surface of femora forming alternating bands consisting of proximal gray-brown, white, gray-brown, white, and distal gray-brown. Remaining leg segments dark brown with tarsi and metatarsi darker. Heavy scopulae on tarsus and metatarsus of leg I and II, dark gray in color.

Dorsum of abdomen with a wide brown median strip running the length of the abdomen, with diffuse black setae covering it. Two pairs of white dots at the anterior lateral edges of the stripe; posterior to these a series of six paired white spots connected by white chevrons crossing the brown stripe. Usually the first chevron is represented by two dashes and the arms of the second chevron do not quite join at the midline. Alternating with the white chevrons are bands of darker brown dots. The areas on each side of the median stripe are speckled with tufts of white setae intermixed with dark brown dots on a lighter brown background. Venter light brown.

Male: The pattern in the male is very similar to that of the female. There are fewer black setae over the body and in over-all appearance the male is somewhat more brownish than the female, which appears dark gray or even black.

Measurements.—Ten females and six males. Standard deviations of measurements of females made by Brady (1962) were used to calculate 95% confidence limits (C.L.) that are more comparable to the ranges listed for other species. Males represent new specimens. See Table 6.

Natural history.—*Sosippus texanus* was first collected and observed in the field at Goose Island State Park, a peninsular area of dry sandy soil, characterized by dense stands of Live Oak (*Quercus virginiana*). A few specimens were collected from funnel webs at the base of the trunks of these trees. The sheet or platform part of these webs was not as extensive as those observed in *Agelenopsis*. Most specimens were collected in an area at the edge of a clearing from conspicuous fun-

nel webs with tubular retreats running under logs and into holes in the ground. Again the sheet portions of the web were not highly developed. The emphasis upon the tubular portion of the webs may have been due to their location, especially those webs at the base of trees. During June 1962, *S. texanus* was collected in Bentsen Rio Grande State Park in a campground not far from the banks of the Rio Grande River. Here it was collected at night from tubular webs at the base of concrete posts and hackberry trees. In one case a male was found at the edge of a female's web.

In the field *Sosippus texanus* was observed resting at the mouth of the funnel. The spider rushed forth with great speed to grab insects that touched the radiating lines of silk that formed the sheet portion of the web. The prey consisted chiefly of grasshoppers and ground beetles. Upon grabbing the insect, the spider retreated rapidly into the tubular portion of the funnel, impeding the struggles of the prey. Spiders with retreats that dead-end into a hole or crevice constructed a second short side tube that they utilized for an escape route when disturbed. Most spiders had these secondary tubes angling from the main tube rather than an exit directly to the rear. Several spiders from this locality were reared to maturity and were observed for several months. One spider kept in a cardboard box, provided with a sandy substrate and sticks for a retreat, constructed a funnel web like that found in the field. This web is shown in text fig. 2 of Brady (1962).

Distribution.—Southeast Texas.

Sosippus californicus Simon 1898
Figs. 7, 42

Sosippus californicus Simon 1898a:25; Simon 1898b:324; Banks 1913:182; Comstock 1913: 622; Comstock 1940:639; Bonnet 1958:4093; Brady 1962:139, figs. 8, 27, 28, 43, 44; Platnick 1993:508; Platnick 2006.

Sosippus pragmaticus Chamberlin 1924:674 (synonymized by Brady 1962).

Material examined.—Types: *Sosippus californicus*: female holotype, Lower California (MNHN).

Sosippus pragmaticus: MEXICO: *Sonora:* female holotype, San Carlos Bay (now Bahía de Ohuira), 25°38′N, 108°58′W, 8 July 1921, J.C. Chamberlin (CAS); this material is presumably lost.

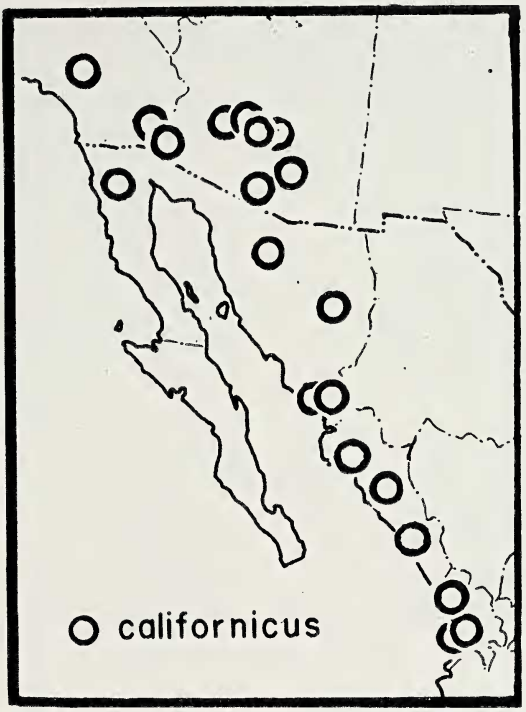


Figure 42.—Distribution map of *Sosippus californicus* in southwestern USA and northwestern Mexico.

Other material (new records): USA: *Arizona:* Pima County: 4 ♀, Brown's Canyon, Baboquivari Mountains, 31°45′N, 111°31′W, 19 July 1959, V. Roth (AMNH); Pima County: 1 ♂, 2 ♀, 1 juvenile, Sabino Canyon, Santa Catalina Mountains, 32°19′N, 110°49′W, 5 June 1952, M. Cazier, W. Gertsch, R. Schrammel (AMNH); Santa Cruz County: 1 ♀, Pena Blanca Lake, 31°24′N, 111°05′W, 19 May 1963, W.J. Gertsch, W. Ivie (AMNH); Yuma County: 1 ♀, Yuma, 32°44′N, 114°37′W, 15 September 1951, D. Richman (AMNH); 1 ♂, same location, June 1958, V. Roth (AMNH). MEXICO: *Sinoloa:* 1 ♂, 19.2 km S. of Guasave, 25°34′N, 108°28′W, 8 July 1967, R.E. Leech (HCC); 1 ♀, Rosario, 23°00′N, 105°52′W, 15 May 1963, W.J. Gertsch, W. Ivie (AMNH); *Nayarit:* 1 ♀, San Blas, 22°52′N, 105°06′W, 4, 5 August 1947, B. Malkin, C.M. Goodnight (AMNH).

Etymology.—Latin adjective derived from the type locality, the state of California.

Diagnosis.—*Sosippus californicus* resembles *S. agalenoides* and *S. michoacanus* in color pattern. Both *S. agalenoides* and *S. michoacanus* can be separated from *S. califor-*

Table 7.—Dimensions of *Sosippus californicus*. Standard deviations of measurements made by Brady (1962) were used to estimate 95% confidence limits (C.L.) that are comparable to the ranges listed for other species in this paper.

	Mean (C.L.)		Mean (C.L.)
	Females (n = 38)		
Anterior eye row	1.62 (1.4–1.8)	Femur IV	7.65 (7.3–8.0)
PME width	1.31 (1.2–1.4)	Patella-Tibia IV	8.86 (8.5–9.2)
PLE width	1.95 (1.9–2.0)	Metatarsus IV	8.26 (7.9–8.6)
POQ length	1.17 (1.1–1.2)	Tarsus IV	3.31 (3.2–3.4)
Carapace width	5.32 (5.1–5.6)	Total IV	28.11 (26.9–29.3)
Carapace length	7.34 (7.0–7.7)		
Body length	16.16 (14.7–17.6)		
	Males (n = 22)		
Anterior eye row	1.40 (1.4–1.4)	Femur IV	8.02 (7.2–8.9)
PME width	1.19 (1.1–1.2)	Patella-Tibia IV	9.43 (8.4–10.5)
PLE width	1.72 (1.7–1.8)	Metatarsus IV	9.95 (8.9–11.0)
POQ length	1.03 (1.0–1.1)	Tarsus IV	3.76 (3.4–4.1)
Carapace width	5.01 (4.9–5.1)	Total IV	31.16 (30.2–32.2)
Carapace length	6.90 (6.7–7.1)		
Body length	13.92 (13.4–14.4)		

nicus by the structure of the epigynum (compare figs. 27, 28 with figs. 9–30 and 31, 33 of Brady 1962).

Color.—*Female:* Pattern illustrated in Fig. 7. Carapace dark brown with the eye region darkest. Eyes outlined with black. A narrow pale brownish yellow median stripe begins just behind the PME and runs the length of the carapace. Carapace with broad marginal stripes of the same color, both the marginal and median stripes densely clothed with white setae. Marginal stripes broadening anteriorly and extending to edge of clypeus. Chelicerae dark reddish brown, almost black. Sternum brownish yellow. Endites darker reddish brown with distal ends brownish yellow. Proximal segments of legs brownish yellow without distinct contrasting markings; metatarsi and tarsi darker brown.

Dorsum of abdomen with a broad dark brown median stripe from base to tip; two pairs of white spots at lateral indentations of stripe anteriorly, transverse chevrons clothed with white setae posteriorly. Brownish yellow area on each side of median stripe thickly clothed with white setae. Lateral edges of dorsum darker brown, mottled with tufts of white setae. Venter brownish yellow.

Male: Very similar to the female in coloration.

Measurements.—Thirty-eight females and twenty-two males. Standard deviations of measurements made by Brady (1962) were used to estimate 95% confidence limits (C.L.) that are comparable to the ranges listed for other species in this paper. See Table 7.

Natural history.—Beatty (1961) reported *S. californicus* from riparian woodland formations. These plant associations occur in or adjacent to drainage ways and their flood plains and are characterized by different vegetation than that of the surrounding non-riparian community. This species occurred at varying elevations depending upon the amount of vegetation and moisture available. In the Santa Catalina Mountains it was collected at about 850 meters elev.

Sosippus californicus constructs an expansive sheet web with a central funnel-shaped retreat leading to the base of grassy vegetation, into crevices, or under large rocks. In Sabino Canyon I observed young spiderlings sharing the sheet web with a large female. In Mexico near El Coyote, Sonora this species was collected from webs leading under rocks in a dry stream bed at 1000 meters. A female with egg case was collected from beneath a rock in a canyon filled with Palm trees 26 km. East of Magdalena at 1300 meters elev.

Distribution.—Arizona, southern California, Baja California, south to Nayarit (Fig. 42). Previous locality records for California,

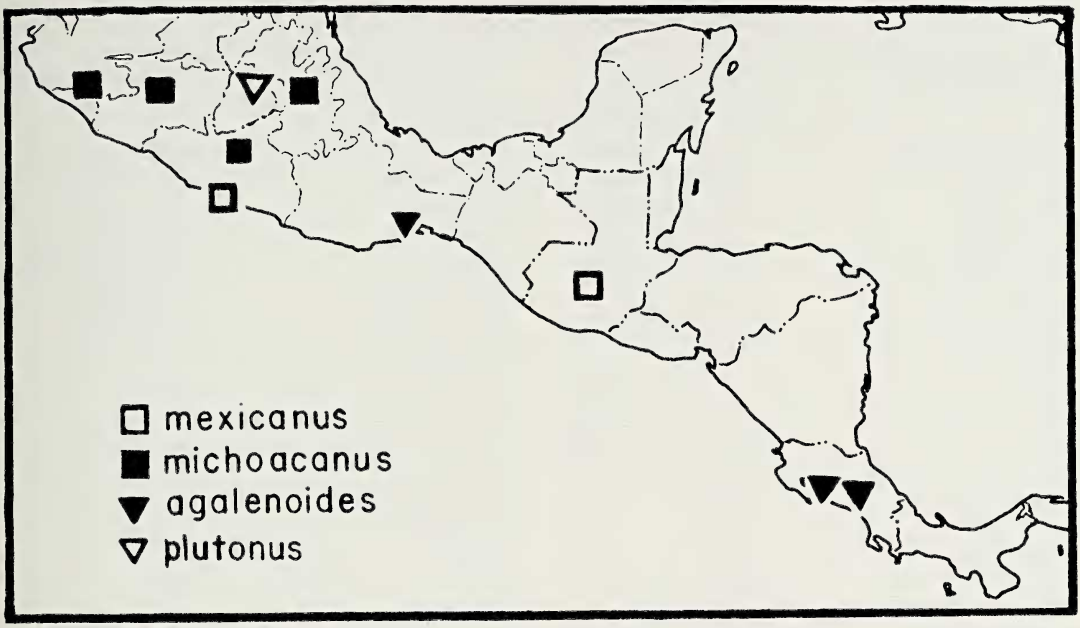


Figure 43.—Distribution map of four *Sosippus* species in southern Mexico and Central America.

Arizona and Mexico are recorded in Brady (1962). New records are listed above.

Sosippus michoacanus Brady 1962
Figs. 10, 14, 28–31, 43

Sosippus michoacanus Brady 1962:148 figs. 7, 31, 32; Platnick 2006.

Material examined.—*Type:* MEXICO: *Michoacan:* Female holotype, Tzararacua Falls, 11 km from Uruapan, 18°55′N, 102°04′W, 14 June 1948, A.M. Davis, L.I. Davis (AMNH).

Other material: MEXICO: *Colima:* 1 ♂, 1 ♀, 12.8 km SW. of Colima, 19°14′N, 103°4′W, 10 May 1963, W.J. Gertsch, W. Ivie (AMNH); *Michoacan:* 2 ♀, Tzararacua Falls, 11.2 km S. of Uruapan, 19°25′N, 102°04′W, 14 June 1948, A.M. Davis, L.I. Davis (AMNH); 1 ♀, same location, 17 June 1964, S. Schlentz (AMNH); *Morelos:* 1 ♀, 4.8 km S. of Cuernavaca, 18°55′N, 99°55′W, 12 July 1963, J.A. Beatty (HCC); *Guerrero:* 1 ♀, Mexcala, 17°56′N, 99°37′W, 2 July 1941, L.I. Davis (AMNH).

Etymology.—Latin adjective derived from the type locality, the state of Michoacan.

Diagnosis.—*Sosippus michoacanus* has an abdominal pattern similar to *S. californicus* (compare Figs. 10, 14 to Fig. 7), but it is much darker in color than *S. californicus* and is readily recognized by the shape of the epigynum, which has a wide neck and greatly transversely expanded middle field (Figs. 30, 31). The male palpus of *S. michoacanus* is also quiet distinct from other species (Figs. 28, 29).

Color.—*Female:* Pattern illustrated in fig. 7 (Brady 1962). Carapace reddish brown, overlaid with black pubescence giving it a darker appearance. Eye region dark brown, almost black, with eyes encircled with black. Thin median stripe beginning some distance behind the third eye row, continuing to posterior edge of carapace. This stripe not conspicuous, with white setae sparsely covering it, densest along the thoracic groove. Broad submarginal stripes extending from clypeus to posterior edge of carapace, clothed with white pubescence. Chelicerae very dark reddish brown, almost black with intermittent, long black setae. Conspicuous boss on each side, light brown. Sternum light brown with gray overtones. Endites and labium reddish brown, yellowish at distal ends. Femora brown dorsally, but with uniformly gray color on ventral surface, forming distinct bands on the lateral and dorsal surfaces. Patellae and tibiae of same color, but with more uniform darker markings.

Dorsum of abdomen with basal reddish

Table 8.—Dimensions of *Sosippus michoacanus*.

	Mean (Range)		Mean (Range)
	Females (n = 9, except *n = 5)		
Anterior eye row	1.67 (1.6–2.1)	Femur I	6.17 (5.5–7.3)*
PME width	1.45 (1.4–1.7)	Patella-Tibia I	8.11 (7.3–9.6)*
PLE width	2.13 (1.9–2.6)	Metatarsus I	4.92 (4.3–5.7)*
POQ length	1.22 (1.1–1.4)	Tarsus I	2.98 (2.7–3.5)*
Car. width at PLE	3.70 (3.2–4.6)	Total I	22.02 (19.6–26.1)*
Carapace width	5.41 (4.8–7.2)	Femur IV	7.00 (6.0–8.6)
Carapace length	7.37 (6.5–9.4)	Patella-Tibia IV	8.22 (7.0–10.0)
Body length	15.35 (13.5–21.4)	Metatarsus IV	7.30 (5.6–8.5)
Patella-Tibia II	7.47 (6.7–8.9)*	Tarsus IV	3.03 (2.7–3.9)
Patella-Tibia III	6.49 (5.9–7.8)*	Total IV	25.62 (22.1–30.7)
	Male (n = 1)		
Anterior eye row	1.6	Femur I	6.5
PME width	1.4	Patella-Tibia I	8.5
PLE width	2.0	Metatarsus I	6.3
POQ length	1.2	Tarsus I	3.3
Car. width at PLE	3.0	Total I	24.6
Carapace width	5.4	Femur IV	8.0
Carapace length	7.4	Patella-Tibia IV	9.6
Body length	14.8	Metatarsus IV	9.3
Patella-Tibia II	8.2	Tarsus IV	3.7
Patella-Tibia III	7.3	Total IV	30.6

brown lanceolate mark, enclosed by wide dark stripe heavily pigmented with black. Dark brown median stripe bordered by lighter brown area, with lateral regions again becoming dark brown. Venter light yellowish brown.

Male: Pattern illustrated in Fig. 14. Carapace dark reddish brown; eye region black. Thin median stripe present in female, not present in male. Broad white submarginal stripes from clypeus to posterior edge of carapace. Chelicerae dark reddish brown, darkened by fine black setae. Small glossy red-brown boss on each side. Sternum and ventral coxae pale brownish yellow. Labium and endites light brownish yellow with distal ends pale yellow to cream. Femora light brown with gray markings forming bands on dorsal and lateral surface; lighter yellow ventral surfaces. Patellae and tibiae same color, but dusky markings producing indistinct pattern. Metatarsi and tarsi yellowish brown, without darker markings.

Dorsum of abdomen light brown with faint lanceolate cardiac mark; flanked by a white dot and dash on each side within a field of light brown. Three white chevrons posterior to cardiac area. Venter light brownish yellow.

Measurements.—Nine females and one male of *Sosippus michoacanus*. See Table 8.

Distribution.—Colima, Michoacan, Morelos, Guerrero.

Sosippus plutonus Brady 1962
Figs. 8, 43

Sosippus plutonus Brady 1962:150; Platnick 2006.

Material examined.—*Type:* MEXICO: *Distrito Federal:* Female holotype, Tenango del Valle (Tenango de Arista), Mexico City, 19°06′N, 99°36′W, 2400 m elev., 25, 26 August 1946, H. Wagner (AMNH).

Other material: MEXICO: *Distrito Federal:* 1 ♀, 2 juveniles, Tenango del Valle (Tenango de Arista), 19°06′N, 99°36′W, 2400 m elev., 25, 26 August 1946, H. Wagner (AMNH); 2 juveniles, Tenancingo, 2050 m elev., 27 September–7 October 1946, H. Wagner (AMNH).

Etymology.—Latin adjective based upon Greek god of the underworld emphasizing the very dark coloration of this species.

Diagnosis.—The shape of the epigynum of the holotype of *S. plutonus* is simlar to *S. californicus*, but the median field is somewhat broader at the base and shorter than in *S. cal-*

Table 9.—Dimensions of *Sosippus plutonus*.

	Measurements		Measurements
	Female (n = 1, holotype)		
Anterior eye row	1.3	Femur IV	5.7
PME width	1.2	Patella-Tibia IV	6.7
PLE width	1.7	Metatarsus IV	5.8
POQ length	1.1	Tarsus IV	2.7
Carapace width	4.3	Total IV	20.9
Carapace length	6.1		
Body length	11.8		

ifornicus (compare figs. 25, 26 with figs. 27, 28 in Brady 1962). *Sosippus plutonus* (Fig. 8) is also much darker in color than *S. californicus* (Fig. 7). Whether these differences will hold up when more specimens are available remains to be seen. The male of *S. plutonus* is unknown and would probably elucidate this problem.

Color.—*Female holotype:* Pattern illustrated in Fig. 8. Carapace very dark reddish brown with the eye region black. A few white setae along the midline represent the former presence of a thin white median stripe. Broad submarginal stripes, brownish yellow and covered with fine white setae, beginning about the third eye row and continuing to the posterior edge of the carapace. Chelicerae black with lighter colored boss on each side.

Sternum brown. Endites and labium dark brown, lighter at distal ends. Coxae dark gray-brown on ventral surfaces lighter amber color in proximal regions. More distal leg segments gray-brown with lighter amber color as follows: dorsal paired bands at proximal and distal ends of femora, entire dorsal area of patellae, paired bands at distal ends of tibiae.

Abdomen, which is considerably shriveled, dark brown, almost black, with a series of paired lighter spots as illustrated that are formed from tufts of white setae. Venter brown.

Male: Unknown.

Measurements.—Holotype female. See Table 9.

Natural history.—Presumably *S. plutonus* constructs a funnel web similar to other species in this genus. In 1962 I considered this to be a species distinct from *S. californicus* on the basis of differences in coloration and genital characters. I suggested that it might be a

Table 10.—Dimensions of *Sosippus mexicanus*.

	Measurements		Measurements
	Females (n = 2)		
Anterior eye row	1.2, 1.4	Femur IV	5.5, 6.0
PME width	1.0, 1.2	Patella-Tibia IV	6.3, 7.0
PLE width	1.3, 1.7	Metatarsus IV	5.9, 6.5
POQ length	0.9, 1.1	Tarsus IV	2.3, 2.6
Carapace width	3.7, 4.4	Total IV	20.0, 22.1
Carapace length	4.7, 5.7		
Body length	12.6, 13.4		
	Male (n = 1)		
Anterior eye row	1.4	Femur IV	7.6
PME width	1.2	Patella-Tibia IV	8.8
PLE width	1.8	Metatarsus IV	8.6
POQ length	1.1	Tarsus IV	3.7
Carapace width	4.6	Total IV	28.7
Carapace length	6.4		
Body length	12.0		

montane species found at extremely high altitude (2400 m) in Mexico. Since no additional adult specimens have appeared in collections, it is possible that this "species" is a high altitude variant of *S. californicus*. Further collections should provide the answer.

Distribution.—Mexico.

Sosippus mexicanus Simon 1888
Figs. 9, 43

Sosippus mexicanus Simon 1888:206; Simon 1898b:325, 327; Pickard-Cambridge 1902:332; Banks 1909:217; Bryant 1948:55; Bonnet 1958: 4093; Roewer 1960:1004; Platnick 1997:585; Platnick 2006.

Material examined.—*Type:* MEXICO: female holotype (MNHN).

Other material: MEXICO: *Guerrero:* 2 ♀, Acapulco de Juarez, 16°51′N, 99°55′W, 1 September 1940, H.E. Frizzell (MCZ). GUATEMALA: 1 ♂, Sarg (BMNH).

Etymology.—Latin adjective derived from the type locality, the nation of Mexico.

Diagnosis.—*Sosippus mexicanus* is similar to *S. californicus* in the shape of the epigynum (compare figs. 23, 24 with figs. 27, 28 of Brady 1962). They differ distinctly from one another in the dorsal pattern on the abdomen (compare Fig. 9 to Fig. 7). Based upon the limited number of specimens examined, *S. mexicanus* is somewhat smaller than *S. californicus* in total body length. There is no apparent overlap in geographic range of these two species.

Color.—*Female:* Pattern illustrated in Fig. 9. Carapace brown, darker in the eye region with the eyes circled in black. A thin, pale brownish yellow median stripe begins behind the PME row and continues to the posterior edge of the carapace. Broad marginal stripes of this pale color starting at the edge of the clypeus and extending the length of the carapace. The median stripe as well as the marginal ones, clothed with short white setae. Darker brown lines radiating from the thoracic groove, accented with white. Chelicerae dark reddish brown. Sternum brownish yellow. Labium and endites darker reddish brown. Legs brownish yellow without distinct darker markings.

Dorsum of the abdomen with a wide brown median stripe, enclosed by two very light broken lines in the anterior region. Posteriorly the lines are separated into a series of dashes, the lines and dashes accented with white setae. Lateral to the light lines and dashes the abdomen is brownish yellow mottled with brown. Venter of the abdomen cream colored.

Male: Median longitudinal stripe on carapace not as distinct as in the female. Dorsum of abdomen with a series of paired white spots outlining wide brown median stripe. Male otherwise similar to female in coloration.

Measurements.—Two females and one male.

Distribution.—Guerrero, Mexico and Guatemala. Nathan Banks (1909) reported this species from Costa Rica, but the specimens in question are immature and appear to be *S. agalenoides* also described by Banks from Costa Rica.

Sosippus agalenoides Banks 1909
Figs. 11, 15, 43

Sosippus agalenoides Banks 1909:217; Roewer 1955:313; Bonnet 1958:4093; Roewer 1960: 1004; Brady 1962:146; Platnick 1997:585; Platnick 2006.

Material examined.—COSTA RICA: *Puntarenas:* 3 female and 1 juvenile syntypes, Puntarenas, 9°58′N, 84°04′W (MCZ).

Other material: MEXICO: *Morelos:* 1 juvenile, Miacatlan, 18°46′N, 99°22′W, 4 October 1942, C. Bolivar (AMNH); *Oaxaca:* 1 ♀, Cerro del Armadillo, 7 January 1948 (AMNH); 1 juvenile, Tehauntepec, 16°20′N, 95°14′W, 15 December 1947 (AMNH); 1 juvenile, same locality, 6–10 February 1948, T. MacDougall (AMNH). COSTA RICA: *Alajuela:* 1 ♀, road to Turracares crossing Rio Alajuela, 10°01′N, 84°13′W, D. Briceno (AMNH); 1 ♀, Finca San Miento near Sialas, 5 February 1976, V.D. Roth, Schroepfer (AMNH); *Puntarenas:* 2 ♀, Puntarenas, 9°58′N, 84°50′W, 1909, P. Biolley (AMNH); San Jose: 4 ♂, 1 ♀, Road to Cartago near San José, 9°89′N, 84°04′W, 19 August 1973, A.R. Brady, R.J. Wolff (HCC); 2 ♂, 2 ♀, Santa Ana near San José, 10°10′N, 85°23′W, 16 July 1994, A.R. Brady, C. Valerio (HCC).

Etymology.—Latin adjective based upon the species resemblance to European genus known by Banks in 1909 as *Agalena* Thorell 1870, which is now considered a junior synonym of *Agelena* Walckenaer 1805 in the family Agelenidae.

Diagnosis.—*Sosippus agalenoides* is most similar to *S. californicus* in color pattern

(compare Figs. 11, 15 with Fig. 7). It can be separated from the latter species by the shape of the epigynum (compare Figs. 38, 39, figs. 29, 30 to figs. 27, 28 of Brady 1962) and the male palpal organ (compare Figs. 36, 37 to figs. 44, 45 of Brady 1962). The epigynum of *Sosippus agalenoides* is also similar to that of *S. mexicanus*, but the former species is much larger in size.

Color.—*Female:* Pattern illustrated in Fig. 11. Carapace light orange-brown, darkest in the eye region. A thin white median stripe begins slightly in front of the third eye row and continues to the thoracic groove. Broad white marginal longitudinal stripes, not as distinct as in *S. californicus*. Lateral edges of the carapace clothed with fine white setae. Chelicerae dark reddish brown, almost black; prominent boss on each side. Sternum light brownish yellow. Endites and labium darker reddish brown; yellowish at distal ends. Proximal leg segments light brownish yellow, metatarsi and tarsi darker reddish brown.

Dorsum of abdomen with a wide brown median stripe beginning at the base and continuing to the spinnerets. The anterior end of this stripe bordered by three white dashes on each side and traversed posteriorly by four to five white chevrons. A series of dark brown dots alternate crossing the dorsum with the white chevron and then continue on each side. Lateral areas of abdomen light brownish yellow, venter lighter, almost cream colored.

Male: Pattern illustrated in Fig. 15. Carapace light orange-brown; eye region dark brown to black. Lighter, thin median stripe, clothed with white setae beginning posterior to PME and continuing to the dark thoracic groove. Broad lighter marginal stripes carpeted with white setae. Chelicerae dark red-brown, almost black, clothed with long white setae. Prominent boss on each side, lighter red-brown. Sternum light brownish yellow. Endites and labium darker brown with cream colored distal ends. Legs light brownish-yellow, with metatarsi and tarsi darker brown. Undersurface lighter with ventral coxae cream colored.

Dorsum of abdomen with a wide brown median stripe from base to spinnerets. Anterior edges of the stripe bordered by paired white dashes and two pairs of white spots, followed posteriorly by four white chevrons. A series of four dark brown dots alternate with the white chevrons crossing the broad median stripe. Lateral areas of abdomen light brown. Venter cream colored.

Measurements.—Nine females and eight males of *Sosippus agalenoides*. See Table 11.

Natural history.—During a field trip to Costa Rica in 1973, Bob Wolff (Hope College student) and I had unsuccessfully explored a number of habitats that appeared to be similar to those that harbored North American species of *Sosippus*. Then we discovered a hillside on the road from San Jose to Cartago that was heavily populated by *Agave* plants. On many of these plants we found the typical sheet webs of *Sosippus agalenoides* with funnel shaped retreats descending into the bases of these succulent, thorny shrubs. After several spiders had escaped, we learned to capture these spiders by coaxing them onto the platform of the web. Unfortunately only a single female specimen was reared from this collection to compare with earlier specimens described by Nathan Banks from Puntarenas, Costa Rica, in 1909. The males of *Sosippus agalenoides* at this time had not been described, but we had to verify that the coastal species from Puntarenas and those we had captured from the mountainous interior near Cartago were the same species. During a subsequent field trip to Costa Rica in 1994, aided by Carlos Valerio, we were able to locate a population of *Sosippus agalenoides* on a coffee plantation in Santa Ana just to the north of San Jose. Most of these spiders had built their webs in a drainage ditch adjacent to the field of coffee plants. The females of this population appeared to be the same species as that described by Banks (1909). The distribution of *Sosippus* in Costa Rica is much more sporadic than populations encountered in North America.

Distribution.—Morleos, Oaxaca, Mexico to Costa Rica.

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Table 11.—Dimensions of *Sosippus agalenoides*.

	Mean (Range)		Mean (Range)
	Females (n = 9, except *n = 5)		
Anterior eye row	1.90 (1.7–2.1)	Femur I	*7.74 (7.2–8.9)
PME width	1.50 (1.3–1.7)	Patella-Tibia I	*9.66 (8.4–11.0)
PLE width	2.07 (1.9–2.4)	Metatarsus I	*6.04 (5.3–6.8)
POQ length	1.31 (1.1–1.5)	Tarsus I	*3.11 (2.8–3.6)
Car. width at PLE	4.15 (3.6–4.7)	Total I	*26.55 (23.1–29.9)
Carapace width	6.92 (5.6–7.9)	Femur IV	9.15 (7.6–10.1)
Carapace length	9.20 (7.6–10.6)	Patella-Tibia IV	10.45 (8.9–11.4)
Body length	21.05 (17.2–25.0)	Metatarsus IV	8.95 (7.3–9.7)
Patella-Tibia II	*8.80 (7.6–10.0)	Tarsus IV	3.09 (2.7–3.6)
Patella-Tibia III	*7.53 (6.8–8.5)	Total IV	30.72 (26.6–34.0)
	Males (n = 8)		
Anterior eye row	1.60 (1.5–1.8)	Femur I	8.11 (7.5–9.3)
PME width	1.28 (1.2–1.5)	Patella-Tibia I	10.35 (9.4–12.0)
PLE width	1.93 (1.8–2.1)	Metatarsus I	6.98 (6.3–8.1)
POQ length	1.08 (0.9–1.3)	Tarsus I	3.36 (2.9–3.7)
Car. width at PLE	3.38 (3.1–3.7)	Total I	28.79 (26.6–33.1)
Carapace width	6.02 (5.6–6.9)	Femur IV	9.19 (8.2–10.5)
Carapace length	7.91 (7.2–9.0)	Patella-Tibia IV	10.69 (9.7–12.1)
Body length	16.23 (14.6–18.6)	Metatarsus IV	10.08 (9.2–11.6)
Patella-Tibia II	9.66 (8.9–11.0)	Tarsus IV	3.67 (3.3–4.0)
Patella-Tibia III	8.42 (8.0–9.6)	Total IV	33.64 (30.5–38.2)

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